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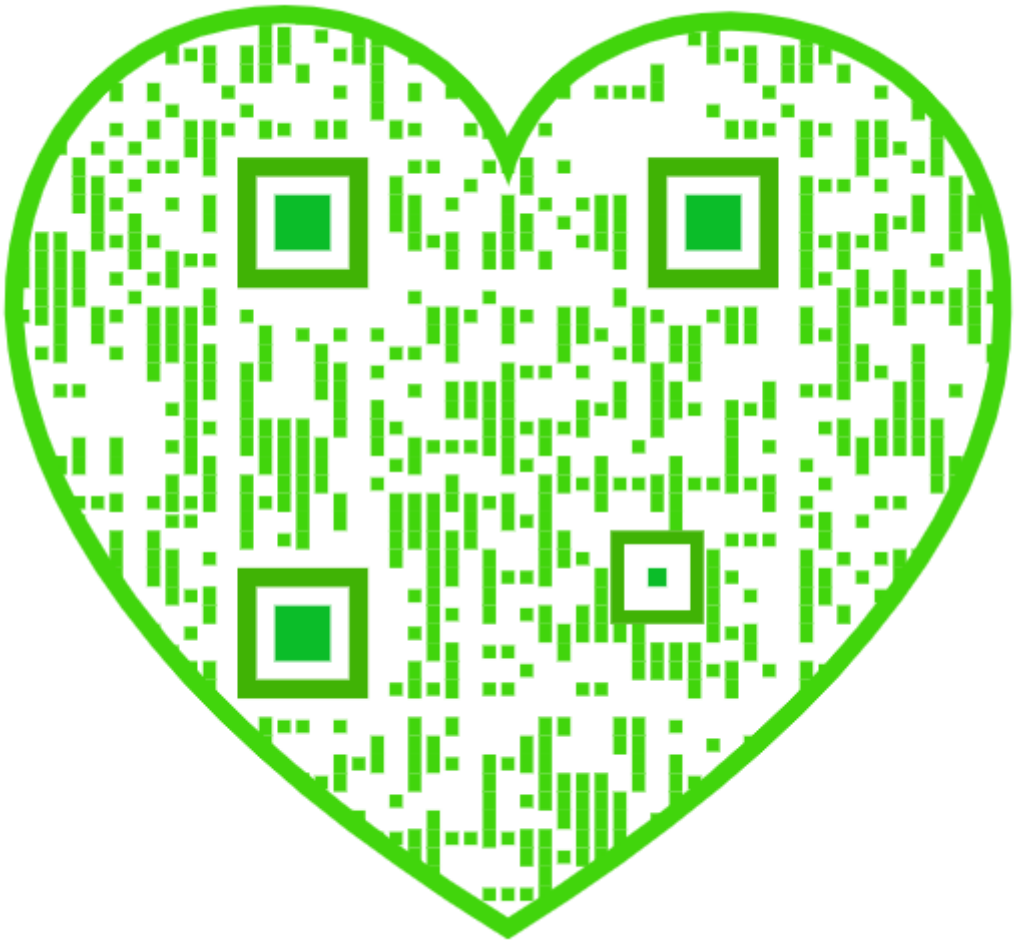

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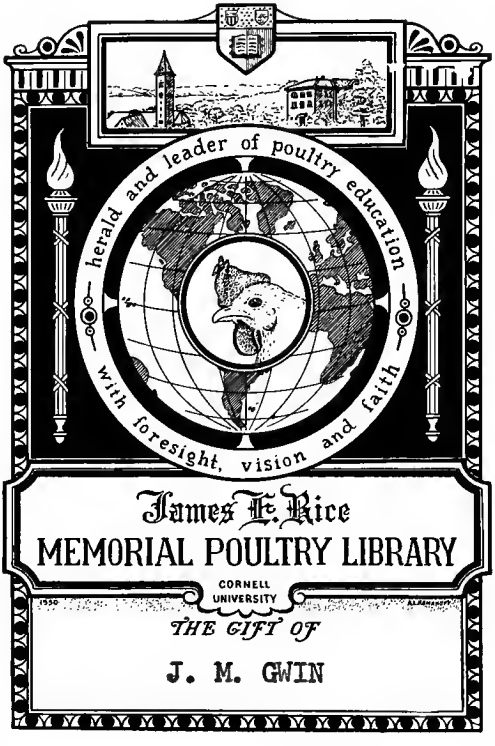

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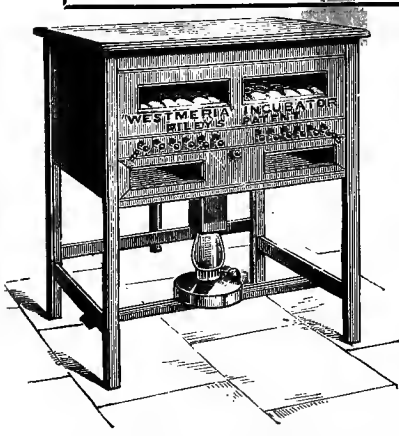

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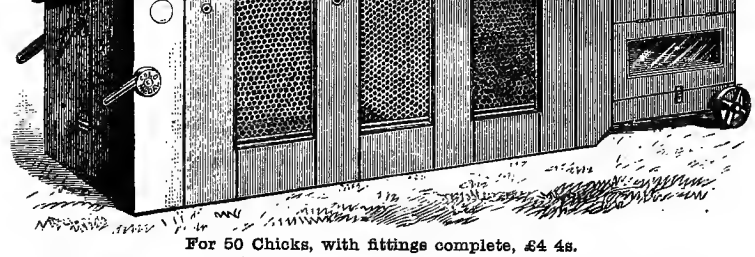

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BY

EDWARD BROWN, F.L.S.

AUTHOR OF "POULTRY KEEPING AS AN INDUSTRY FOR FARMERS AND COTTAGERS," "INDUSTRIAL POULTRY KEEPING," ETC.; LECTURER ON POULTRY TO THE CUMBERLAND, HAMPSHIRE, ISLE OF ELY, KENT, LINCOLNSHIRE, NORTHUMBERLAND, AND OTHER COUNTY COUNCILS; LATE EDITOR OF THE "FANCIERS' GAZETTE," JUDGE OF POULTRY AT THE ROYAL AGRICULTURAL SHOWS, 1887, 1891, 1892, AND 1893, ETC., ETC.

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OF THE PEOPLE;

AND WHOSE KINDLY INTEREST IN

POULTRY KEEPING,

RECREATIVE AND INDUSTRIAL,

ARE HEREBY

GRATEFULLY ACKNOWLEDGED BY

THE AUTHOR.

PREFACE.

POULTRY culture, from its practical aspects, has been fully dealt with in my two works, "Poultry Keeping as an Industry for Farmers and Cottagers" and "Industrial Poultry Keeping," and the appreciation with which they have been received has led me to deal with the question from another standpoint, namely, that of pleasure or recreation. There are vast numbers of poultry keepers who do not wish to sell either egg or chickens. It is enough if they partly or wholly supply their own domestic needs, but the beauty of, and pleasure in, their fowls is of primary importance. For such "Pleasurable Poultry Keeping" has been written. That pleasure and profit can be combined is unquestionable, and it is hoped that in these pages will be found all necessary instructions for the successful conduct of their operations.

EDWARD BROWN.

LONDON, *November*, 1893.

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INTRODUCTION.

THE PLEASURES OF POULTRY KEEPING.

Historical — England the home of breeders — Poultry keeping as a recreation — Love of Nature in man — Economical value of poultry keeping—Eggs as food—Poultry for profit—Wide choice in poultry — Amateur poultry keeping — Universality of the pursuit.

THE domestic fowl is indissolubly associated with the history, as with the pleasures of man. Sacred writings, mythological records, legendary lore, and national customs alike show traces of a pursuit which, though it has sometimes been debased to the lower passions of man, has to a greater degree ministered to his higher nature, and also at the same time contributed to his material needs. Ancient and modern warriors have been inspired by the courage of the game cock, literature has been enriched by similes drawn from the diligence and maternal devotion of domestic fowls, science has found these minor members of our live stock valuable aids to the determination of natural problems, the recreative instincts of man —man, I mean, limited by the conditions of modern life—have provided a delightful way of his gaining new strength for the battle of life, and some forms of religion have elevated members of this genus into deities or used them for sacrifice to the gods.

England may be termed the home of breeders. It appears to be part of the British nature, wherever found, to endeavour to improve the quality of the animals, birds, or plants around. In no other country is there the same proportion of high-class stock as in this little island. It is to Britain that buyers turn for the wherewithal to improve their stock. This habit is shown in almost all sections of society, for earnest and skilful breeders are to be met with in large numbers not only amongst those who have wealth and space at their disposal, but also among the very poor; and this spirit of stock breeding permeates all classes, from the Queen down to her poorest subjects. It is, in fact, part of the British nature, and will find an outlet in one way or another. The wealthy breed their racehorses or their pedigree cattle, with the farmer, as far as his means will allow, following in their wake; suburban residents breed dogs or poultry, and cottagers take up poultry and gardening; whilst the denizens of our crowded towns make cage-birds or rabbits their pets, unless they are more favoured than usual and can manage to keep a few fowls or pigeons. Nearly every one of these, whatever be the animal or bird he breeds, desires to improve it in one way or another; and, be it noted, the object is not a mere mercenary one. It is for the pleasure derivable from witnessing and aiding the process of improvement. To this spirit we owe a vast advance in the quality of our domestic animals, and, but for it, should not be in the position we are now occupying as the breeding centre of the world. There is another factor to be considered, namely, that the very limitation of space, which cannot but be the case with the majority of British breeders, has had a direct effect upon the stock produced. Few there are who can keep all the animals or birds they breed,

and they have very speedily to kill off a portion, which, being naturally the worst, eliminate such as would have the tendency to reduce the standard. For instance, if a poultry breeder only has sufficient room for twenty fowls, he is almost certain to breed a hundred, and must get rid of eighty per cent., some of which will be killed and consumed, and others of which may be sold. Naturally, he kills off those who are halt, lame, and blind, most deficient in the special qualities for which he is breeding, reserving the best for himself. In this way the process of improvement goes on steadily, and in a few years the stock assumes a higher character. Some there are who believe apparently in mongrels rather than pure breeds, but we are not of that number, for we contend that all the success we have had as a nation in breeding has been due to the individual races of animals and birds we have produced or improved.

Man needs variation even in his daily life, and for his perfect development must not give all his thoughts to one thing. In this day of specialism there is grave danger lest we should be absorbed by a single duty. If a man allows himself to be entirely taken up by his business or daily labour, he may become more successful in that one direction than his neighbour, but he is a worse man than he who has some variation, and his faculties suffer a serious limitation. We want variety, and we must have it.

Man also needs recreation. Without it his manhood is dwarfed, his mind enfeebled, his soul fettered. Teach him that relief from work, from worry, and from care is best found by means of such studies as I have named, that even in the hardest lot there may be some alleviations, and he will be a better man for it. I never see in lowly homes a canary, a poor plant, or a miserable hen walking on the stones, without feeling that there is a

heart yearning for the unattainable. Even these poor substitutes are better than none, for they bring some gleam into the spirits of their possessors.

The truth here referred to was well expressed by a writer more than a generation ago.* "We have a strong idea that the love of animals and the rearing of them, are very humanising and softening tastes; and that if a mania suggests the care of them to the lower classes (who, after their monotonous mechanical toils, want something *living* to take charge of), it would be doing good service: those who live amid machinery, looms, shops, workrooms, and factories, would be benefited by having their pets, their domestic animals at home—whether fish or fowl, dogs or rabbits. . . . All these things do good—have gentle influences—keep the heart somewhat green in the midst of this dry, dusty world of ours, draw out feeling, and call forth a certain measure of affection.

"We are convinced that those who are engaged in the more sedentary trades need something breathing or growing—something of God's visible works—to keep them from depressing or self-centralising thoughts, or from vacancy of mind altogether. The mere thought of having to take care of things, to feed or to water, somehow or other does good: and then there is a respond or return in the favourite animal, or the plant: the flower breaks forth with grateful utterances as its leaves unfold before the master's eye, the dog licks its master's hand, the bird leaps to the side of the cage and puts its little beak through the bars, or the fowls come scrabbling and skipping across the yard: there is sympathy; the workman's heart is exercised—it is kept in play—it does not grow quite hard or sour; the principle of living is

* *National Miscellany*, May, 1853.

preserved to some extent by such means as these; and if by any means we can keep a man's heart softened, and excite his sympathy in some direction or other, we may hope for the formation of character, as there is ground to work upon, and even high Christian principles may in time be grafted in."

If we grant that man needs recreation—and this fact will scarcely be denied by even the most misanthropic—it will not be difficult to show that poultry keeping is an admirable method of attainment. Some there may be who wonder what there is to see in cocks and hens, but I have known men saved from great moral failure because they found that for which their natures craved in the keeping of fowls. This, of course, will not be efficacious in all cases. Tastes vary in recreation as much as in every other department of human life. But poultry keeping is one of the best forms of recreation, for it combines beauty and utility to a remarkable degree. It satisfies that longing for moulding life to our own ideals which seems to be inherent in every one. Probably if all had the opportunities we should breed horses or cattle, but when the larger pursuits are beyond our reach, we can secure the lesser. The man who takes up poultry keeping ought to be better for so doing, unless he has a very low motive indeed. Given a love of animals, a desire for beauty, or that innate affection for all nature, in the development of which every one must be better, and the pursuit will be of an elevating tendency. Some of us may have commenced poultry keeping with the mere desire to supply the material wants of the household in the direction of eggs—a very praiseworthy object. Others may have had different reasons, and in many cases health has been the primary motive. The having an object takes one into the open air. Well do I re-

member one who was incapacitated by accident from work. His life was suddenly changed from great activity to complete inability. For a time the mind nearly lost its balance, but a friend made him a present of some fowls, and gradually the thoughts were taken from self, and his last years were brightened by the pets around him. Men and women of all classes find relief from daily toil in their poultry yard. In many of the English manufacturing and mining villages the poultry fancy has been one of the greatest boons which could have come to these people. Husbands and wives take an equal interest in the birds, looking keenly forward to the time when their merits shall be tested in the show-pen, the wife carefully tending the stock, both old and young, when her husband is at work. Some of the very finest birds emanate from these small breeders, who know well what is wanted, for they are skilful and experienced poultry keepers.

There is another aspect from which poultry keeping can be regarded, and whilst I do not minimise the advantages to be derived from it on the score of health, of recreation, and of pleasure, we must not forget the economical aspect of the question.

The question is often asked, "Do poultry pay?" For upon this subject there is a vast mass of ignorance. We hear on all sides the statement that poultry will not pay, that they are not worth keeping, that they are a nuisance and a trouble, and so forth. These statements can at once be dismissed, for they are as extravagant as is the notion that poultry farming is a royal road to fortune. Probably one has been born of the other. That poultry kept in a small way by amateurs can be made profitable is undoubted. Thousands will testify to the truth of this statement. In every household there are

scraps which are generally wasted, but if fowls be kept they are consumed, and the birds largely provided for in the way of food. Apart, therefore, from the advantage derived from the having of perfectly fresh eggs, they are profitable to keep, and there is all the pleasure thrown in. But for the vast increase in the number of amateur poultry keepers during the last generation, this country must have been more dependent upon other nations for its poultry produce. It has been stated that every man who makes two blades of grass grow where there was only one before, is a benefactor to his country, and he who assists in developing one of the finest of all food products in the shape of eggs and chickens, equally deserves our praise, even though his object be a personal one. Under the conditions I have named poultry will pay, if they are rightly chosen and properly managed. Recklessly undertaken and carelessly looked after, failure is sure to result in this as in every other pursuit.

To many people a hen is only a hen—"only that and nothing more." When we remember that there are nearly fifty varieties of poultry, with the most diversified characteristics and qualities, it will at once be seen how easily a mistake can be made. We have fowls like the Hamburghs that will lay under proper conditions 220 eggs per annum, and the Cochin which seldom exceeds 80 in the same period. Then there is the Dorking—perfection of table fowl—and the Spanish, whose meat is dry and not much of it. Again there is the Brahma, weighing a dozen pounds, and the Bantam, not weighing as many ounces. Between these there is a perfect gamut of varieties partaking of one or more of the qualities named. Thus discrimination is needed in order to secure a right kind. Some breeds thrive admirably in

confinement, whilst others need an abundance of space; some are rapid growers, others are slow in development; some are what are termed non-sitters, that is, do not as a rule undertake maternal duties, whilst others are good sitters and make admirable mothers. When the question is purely one of pleasure, and the produce of the birds a secondary consideration, choice is much simplified, for then the fancy is free, and we can give play to our tastes and desires, merely regarding the limitations of our position and circumstances. Beauty is to be found in many varieties, though beauty is always a relative term.

It will here be useful to consider what is meant by the term *amateur* poultry keeping. Too often the word italicised is understood to mean "novice," but in my dictionary I find it defined thus :—

"Amateur. One who cultivates any study or art from taste or attachment, without pursuing it professionally."

This is the sense in which I have used the word, and I am anxious to say that in order to secure the fullest pleasure from poultry keeping it should be taken up as a recreation, not as a source of income. I do not mean that advantage should not be taken of having good stock to sell eggs or poultry in order to meet the expenses, but let this be the secondary motive. Breed for breeding's sake. Love the fowls for themselves, not for any profit they bring. Nearly every evil which in these days gathers round sport or pleasure of any kind arises from the professional, or semi-professional, element which growingly takes hold of it. It is specially desirable, therefore, that encouragement should be given in the direction of amateurs. The farmer should keep fowls for profit, the smaller poultry keeper for pleasure. Hobbies lose their value when they become businesses,

Strange mortals are we. Work that would crush us if it were to be paid for will be freely rendered if it is for love or pleasure. Imagine a cricketer or bicyclist working as hard as they do now from duty; they would howl out about cruelty and tyranny. Men who came out on strike because they thought nine hours enough time to work each day, have been known to slave like niggers and sit up two nights and a day in connection with a poultry show. One was work, the other recreation.

Poultry breeders are not confined to any one class of the community. Cock-fighting, however much we may condemn it, was as much the pursuit of the rich as of the poor, and would never have assumed the important place it did but for the support accorded to it by the wealthy. Since its abolition gentlemen have not favoured poultry breeding so much as before, though there have been plenty of exceptions to this rule. Still, on the whole, amongst the wealthier sections of the community, poultry keeping has been more followed by ladies than by gentlemen. In this respect her Majesty the Queen has been a prominent example, for at Windsor there is a large and well-appointed poultry house, stocked with several of the best varieties of fowls, some of which are of a high order. Of this house we shall have something to say later on, as it is well worthy of description. Amongst others who have been or are yet to be numbered amongst poultry fanciers, in that they breed high-class fowls and exhibit them, are the Duchess of Hamilton, the Duchess of Portland, the Countess of Aberdeen, Countess Spencer, the Countess of Dartmouth, the late Lady Brassey of *Sunbeam* fame, the late Lady Gwydyr, the late Duke of Sutherland, Sir Henry Thompson, and others. H.R.H. the Princess of Wales keeps a considerable number of fowls at Sandringham, and we believe of

good varieties, but she has never exhibited them in this country. Thus it will be seen that the poultry interest touches some among the highest in the land. When we come to those whose positions are not so exalted in life we find that the number of poultry breeders is legion. Many of our best fanciers are of the middle class, who perhaps would be horse and stock breeders if they had the means and opportunity, but for one reason or another have to content themselves with something smaller. And among the working population, as already shown, the breeding of fowls is a hobby and recreation not to be measured by figures nor gauged by results. Were there no other advantage to be secured, the mere provision of a relief from the monotony of their existence for thousands of our toilers, some of whose lives are cheerless in the extreme, would make the poultry interest one deserving every encouragement.

CHAPTER I.

SELECTION AND BREEDING.

Choice of a breed—How to select a variety—Fowls for confinement and liberty—Table and general purpose fowls—Selection of stock—Influence of the sexes—Importance of good health—Value of standards—Fixing variations.

It is sometimes very puzzling indeed for any one not acquainted with the characteristics of our many breeds of domestic poultry to know which one to select, and without some guidance in the matter it is more than probable that a mistake will be made. We are sure that very often the condemnation of poultry keeping as a profitable pursuit is due to mistakes in selection. The failure results from the ignorance of the poultry keeper, who, as is often the case, regards all fowls as pretty much the same, and does not take the trouble, small though it may be, to discover whether there is any difference at all between the breeds. A hen is a hen, and nothing more. First come is first taken. If the result is not satisfactory, as the chances are it will not be, the keeping of poultry is condemned. In subsequent chapters will be found information both as to appearance and qualities of the various races of poultry. In France we do not find the state of affairs referred to above. Long experience and careful breeding, and the

seeking after economic qualities, have shown which are the best varieties of fowls for each district, and whilst there is not the same choice that we have here, there is not the danger of any one taking up a breed utterly unsuited to his place, or to the object he has in view. There we find each district giving its name to the fowls, as Houdan, La Fleche, Le Mans, &c. The only instances of this kind in the United Kingdom are the Dorking and the Scotch Grey, both of which are indigenous and eminently suited to the district and country whose names they bear. To the Surrey hills around Dorking we owe the breed of that name, and to the Lowlands of Scotland the Scotch Grey.

From this it will be seen that the primary consideration for a beginner is—What breed or breeds of fowls will best suit the place I can give to them, and the objects I have in view? Some may be disposed to place the latter part of the question first, but we do not. No breed can succeed if unsuited to the place where it is kept, and therefore the suitability should be dealt with first of all. There need be little fear but that the two considerations can be made to agree, for there is a large choice in the thirty or forty breeds and sub-breeds of domestic poultry, each of which, with but one or two exceptions, are useful for some general or special purpose. The matter of accommodation available, and whether the birds are to be kept in confinement or allowed their liberty, must also be considered, and it will be the better plan to take these points *seriatim*, in order to show the special qualities and characteristics of each variety, and thus help readers to select those which will suit their own conditions and requirements.

The question of place and position comes first of all. It will be apparent that where the ground is dry, warm,

and sheltered, there is no limit whatever to the choice. A mistake cannot then be made as to this part of the business. But where it is cold, damp, or exposed, there are varieties that will not thrive under these conditions, and we should recommend any of the following breeds: Brahmas, Cochins, Plymouth Rocks, Wyandottes, Orpingtons, Scotch Greys, Langshans, Houdans, Minorcas, Leghorns, Andalusians, Black Hamburghs, Malays, Game, ducks, and geese. Thus it will be seen that it is a very wide choice. But it is presumed that even if the place be cold, damp, or exposed, the most that can be will be done to overcome the disadvantages of the position, by good housing, and by feeding on suitable foods. Without these points are attended to we cannot hope that any breed will thrive, or if a few birds do so, it will be in spite of disadvantages, which in other cases would be overwhelming. A cold or damp place is sufficient in itself to strive against, without the addition of an artificially created hindrance.

If the fowls can be given full liberty, there is again no obstacle on that score, and the choice is free and open; but if they are to be kept in confined spaces we would suggest the following as most suitable: Brahmas, Cochins, Plymouth Rocks, Wyandottes, Orpingtons, Langshans, Scotch Greys, Houdans, Minorcas, Leghorns, and ducks.

The demand for produce must be our next consideration. Assuming, therefore, that eggs are required first of all, the following breeds will be found the most useful: Minorcas, Leghorns, Black Hamburghs, Andalusians, and Houdans will give the larger number of eggs; but the heavier breeds, such as Langshans, Plymouth Rocks, and Wyandottes are better winter layers. The former are all non sitting varieties—as are the Black Spanish

and Polish, but the latter are delicate, and are not to be recommended except as fancy fowls—and they are remarkable layers, as some of our readers can testify. All except the Black Hamburghs lay good-sized eggs, sufficiently large to meet ordinary requirements. Ducks especially Pekins and Muscovys, also are very heavy layers, and their eggs, though not popular for ordinary table purposes, are highly prized by cooks and confectioners, who are generally willing to pay a reasonable price for them.

Any of the Dorking tribe, also Creves, La Fleche, Game, or ducks may be selected where the great demand is for table fowls. Game, however, scarcely do well when pure bred. Crossed with Dorking or French, they make very fine birds for the table, but pure they are rather small in size and close in flesh. Should there be a local prejudice against dark-coloured legs, it will then be almost necessary to adopt the Dorking, as all the French breeds, except the Houdan and the Game, have dark legs. Should the place be unfavourable for Dorkings, the difficulty can in some measure be overcome by crossing the Scotch Grey with the Dorking or with the Houdan, thus obtaining a hardy fowl with light-coloured leg. This prejudice in favour of white legs is a very foolish one, but it has to be regarded for all that.

Where there is an equal demand for both eggs and chickens, to meet this, one of what we may term the "generally useful breeds" should be chosen. These comprise the Brahma, both light and dark, but light preferred; the Cochin, Langshan, Plymouth Rock, Scotch Grey, Wyandotte, Orpington, and Houdan, all of which, as already stated, are hardy, and can be kept almost anywhere. Of the pure-breds we regard the Langshans as best, for they are good layers and remark-

ably good flavoured and white-fleshed on the table, but require a mild position. Next we should place the Houdan, then Scotch Grey, after which would come the Plymouth Rock, Wyandotte, and Orpington, in the order named. No one of these is a very rapidly growing breed, save, perhaps, the Houdan, and, therefore, for early spring chickens they are not suitable. Of ducks, the Aylesbury grows quickest, the Rouen attains the largest size, though Cayugas are not very far behind. But there are also many crosses in ducks which can be made with advantage, both for layers and table fowls. Geese and turkeys are always profitable, but the latter require a dry, warm place, or they will not thrive.

The selecting of birds for breeding is a very important point—more important than is generally regarded, for parents impress upon the progeny their own characteristics. Good points are produced, and if the breeding has been careful these are probably improved upon; but bad points are also reproduced, and can be aggravated unless care is taken. By skill and knowledge the former may be increased and the latter decreased, if not altogether removed; but it must be borne in mind that bad qualities are apt to prevail if vigilance be relaxed. The poultry breeder needs to have a clear idea of what he is aiming at, and must ever keep his end in view. Those who have high-class exhibition poultry are most particular regarding the selection of stock birds, and will take an amount of trouble that would be regarded as unnecessary by those who do not understand the importance of this matter. Years of judicious breeding may be upset by one mistaken cross, and though ordinary breeders need not be so particular as those who breed for feather, yet it is necessary to exercise considerable thought regarding the question. It

would be foolish indeed to spoil a good strain for want of a little forethought and trouble.

Each of the sexes has a certain and defined influence upon their progeny, and knowing this we have sufficient guidance enabling us to select what we require. Male parents affect the external structure, shape, outward characteristics, and movements of the bird, while female parents control the internal structure, constitution, temper, fecundity, and habits. Here, then, are defined lines upon which to proceed, and we shall shortly see how we can follow them, but it must be remembered that there is greater certainty with pure-breds than with mongrels. The characteristics of previous generations are apt to show themselves when least expected with cross-bred fowls, and it is difficult to avoid disappointment with them. Time and patience will, however, do much in this direction.

We have spoken of the necessity there exists for care in the selection of stock, and the influence parents have upon their progeny. As already noted, the male parent influences external characteristics as well as shape of the bird. The first thing, therefore, is to see that a cock selected for breeding purposes shall have size, and by this we mean size of frame, not merely fat and feathers. A fat bird is seldom a good breeder, and there is many a fluffy feathered fowl appearing large in size, but when taken into the hand is found to be very light. A small bird will seldom get large ones, and thus the importance of this point. Then the bird should be examined, to see if there are any grave defects, that is, if deformed in body or limbs, or having any characteristics regarded as blemishes in the special variety to which it belongs. However good a bird might be in other respects it would be very foolish to select one so

affected, as it would transmit the fault, and probably in an intensified form, to its descendants. A bird weak or deformed in its organs of locomotion would be a bad one to breed from, and, in fact, it may be taken as a rule that the bird which is shapely, of good size, and looks best, is really the best for breeding purposes. Many birds with defects such as we have spoken of are of no use for laying or table purposes, but if bred from, these defects will not only be perpetuated but exaggerated, until it will be very difficult to get rid of them. Some breeds of fowls, which at one time were amongst the most useful of domestic poultry, have been completely ruined by fanciers, who have seized upon some one point, it may be an actual defect, and by breeding for it have injured the really good points. In choosing a cock to breed layers, we should select one firm and close in body, of a good size, though not abnormally large, clean and tall on leg, and active in its habits; whilst for the production of birds for table purposes it is better to pick one heavy in body, shortish on the leg, deep in breast, and not very active.

The hen, as we saw before, affects the internal structure and vital organs. Thus it will be found that a good layer will produce good layers, a good mother good mothers, and a ready fattener those most suitable for table purposes, if—and the if is an important item in these calculations—the male bird is selected accordingly. With regard to hens, the same thing applies with respect to shapely, well-made birds, for though a hen may have a fault in the organs which she does not influence as much as the cock, yet that defect will almost certainly be transmitted to a greater or lesser degree, so that the choosing of a good bird is very essential. For producing layers only those birds known as good layers should be

bred from, and it is better to use non-sitting breeds, say, Minorcas, Leghorns, Andalusians, or Houdans, for these breeds can give their undivided attention to laying. For mothers the chief requirements are a quiet, even temperament, and size, so as to cover a goodly number of eggs, but of course they must be of the sitting breeds. For table purposes they are wanted of a quiet, contented nature, and similar in appearance to the male bird described above. We need scarcely add that no bird with the slightest sign of disease or hereditary complaint should ever be bred from. Stamina and good condition are, perhaps, of equal importance to anything else in breeding fowls, and it is courting failure to neglect these points. Consanguinity is also to be guarded against, as breeding-in soon debilitates and reduces the size of the birds.

The question is very often asked "Whether arbitrary standards are not a hindrance rather than a help in the production of animals for the supply of food?" and we propose now to discuss this subject. That the question is a reasonable one no one can doubt who has inquired into the matter, for it is apparent in some cases that the perfection of one point given prominence to in standards has led to a weakening of economic qualities. That this is not the fault of the standard, but of its application is evident. If we run any system to the death, the system must not be blamed for the result. Use is not abuse, nor is abuse use. This is a fact that in all such considerations as the present ought to be kept in mind.

The object of the formation and application of all standards ought to be the perfection of some qualities which are sought to be perpetuated. These qualities may be merely ornamental, or they may be useful. In this respect Nature is the great teacher, and we find her standards expressed in all varieties of plant and animal

life. They are unwritten it is true, but are none the less there. And in each case is some defined object if we could only find it. Darwin has taught us that for every plant and animal, however strange it may be, however peculiar its appearance or its "points," there is an object, and its variations are not without a real purpose. The great naturalist just named says in "Animals and Plants under Domestication" that "From a remote period, in all parts of the world, man has subjected many animals and plants to domestication or culture. Man has no power of altering the absolute conditions of life: he cannot change the climate of any country; he adds no new element to the soil; but he can remove an animal or plant from one climate or soil to another, and give it food upon which it did not subsist in its natural state. It is an error to speak of 'tampering with Nature' and causing variability. If a man drops a piece of iron into sulphuric acid, it cannot be said strictly that he makes the sulphate of iron—he only allows their elective affinities to come into play. If organic beings had not possessed an inherent tendency to vary, man could have done nothing." It will thus be seen that there is the disposition to vary in nature, and it is this disposition which enables standards to become valuable to the breeder.

Natural selection is a term which has been adopted to express the methods by which animals and plants are made to assume so many different forms when left to their own evolution, and the same tendencies are at work, or rather they are guided, when we come to artificial selection. This process Darwin very clearly describes when he says that "selection may be followed either methodically and intentionally, or unconsciously and unintentionally. Many may select and preserve

each successive variation, with the distinct intention of improving and altering a breed, in accordance with a preconceived idea; and by thus adding up variations, often so slight as to be imperceptible by an uneducated eye, he has effected wonderful changes and improvements. It can, also, be clearly shown that man, without any intention or thought of improving the breed, by preserving in each successive generation the individuals which he prizes most, and by destroying the worthless individuals, slowly, though surely, induce great changes. As the will of man thus comes into play, we can understand how it is that domesticated breeds show adaptation to his wants and pleasures. We can further understand how it is that domesticated races of animals and cultivated races of plants often exhibit an abnormal character as compared with natural species, for they have been modified, not for their own benefit, but for that of man." From this it will be seen at once that the ideal of standards is to fix some variation or variations, in order that they may be preserved, and that such qualities as they represent may not be lost. We have not yet learnt all the correlative values of external and internal qualities, but it is certain that they have considerable influence one upon the other. For instance, it is now very generally conceded that a strong relationship exists between the comb and the egg-laying powers. All the most prolific layers have large combs, and on the other hand nearly all the table varieties have small combs as compared with the size of their bodies. A reduction of size in the comb of a Minorca or Leghorn would mean a lesser egg production, and the enlargement of a Game fowl's comb would tend to deteriorate the quality and quantity of the flesh which it carries. Again the great development of hock feathers in the Brahma

has certainly weakened the laying of this breed, and many other instances could be given as showing the same thing. These will, however, suffice.

It may, therefore, be taken that when any variation is found to conserve some manifest quality which it is desirable to retain and perpetuate, it is necessary to idealise it in a standard. This has been well expressed in a recent work, which says, "The principles upon which a standard is based are not arbitrary, but natural, are not made, but discovered. Only violation of principles is arbitrary. To discover true principles one must go to Nature; must of her take lessons; must consult her in her varied developments. Whenever one deserts nature there is danger of violating principle, of becoming arbitrary and unreasonable, and at last of becoming extremely absurd. To use a figure of speech, borrowed from one of the learned professions, we may say that nature is the constitutional law, the Standard the statute law of poultrydom. To the former the latter must bend." That this is true could be evidenced by several instances in which arbitrary standards have been adopted, with the result that the breeds they have intended to improve have been injured—it may be irretrievably so. A standard should not be hard as cast iron, but at the same time it must not be lax.

The value of standards is in the fact that they enable us to preserve some quality which we have found, either for its beauty or utility, to be worthy of preservation. They offer a type for which we may strive, an example which we may seek to attain. It is only by them that our domesticated animals are preserved from sinking into a species of mongreldom, wherein all the benefits to be derived from careful breeding would be lost. Take, for instance, the Dorking; we know that the square body,

short white legs, neat comb and head, and massive frame give to us one of the finest of table fowls, and the standard for this breed teaches us how to preserve what we have secured, and how to improve these qualities.

Colour is a minor matter in itself, but colour is an evidence of purity, and is retained because it gives a hall mark to the breed, and is a testimony to its being free from alloy. We regard it as essential that standards shall be employed, but these standards must not violate Nature, they must run in unison with her. If they are in conflict they must be altered, or the individual merits of the breed so dealt with will soon be sacrificed.

CHAPTER II.

HOUSES AND HOUSING.

Use and luxury—Height of roof—Size and shape—Windows—Doors—Materials to be used—Roof—Floors—Lean-to poultry house—Adapting existing buildings—Portable poultry houses—Her Majesty the Queen's poultry house—Lady Aberdeen's poultry house.

WHAT form the poultry house shall take depends largely upon the length of purse and tastes of the poultry keeper. If he is so disposed, he can make a very primitive affair answer his purpose, and be his own carpenter, when the cost will be very small indeed; or, should he desire something better than this, he can obtain one of the regular kind of houses such as may be made by any joiner, and which are sold in this country by the makers of poultry appliances. But if this sort of thing is not good enough to meet his wishes there is no limit to the amount of money he can spend, and he may make his fowl house as ornate as the most stylish Queen Anne architecture will allow. We have in our peregrinations through the various poultry yards of this country and of the continent of Europe, seen almost every form of house, from the small home-made affair—a hogshead or a bacon box adapted to the purpose, and costing but three or four shillings at the most—to palatial edifices, designed by

professional architects, and replete with all the latest improvements for ventilation and facility of working, costing hundreds of pounds. To many persons the latter may be thought a great waste of money, but it is not really so, for the owners would have no real pleasure in their pursuit if they kept fowls in the ordinary kind of poultry house. For any one to build such a house, either for flowers or fowls, and then complain that the thing does not pay, is ridiculous. Whatever is spent more than is actually necessary must be put to the luxury of the poultry keeping or horticulture, but if those who desire luxury like to pay for it, there can be no objection to their doing so. Poultry keeping is the same as many other pursuits. It can be conducted on profitable lines. But it may also be made an expensive hobby, and it depends entirely upon the way in which operations are conducted, whether it brings to or takes money out of the pocket. I am desirous, therefore, of making this very clear, for I have known men spend hundreds of pounds upon their establishment, conduct everything upon the most costly and extravagant lines, and then cry out because they lost money. At the same time it is only fair to say that there are those who have spent money in what might be termed an extravagant fashion, but who make their poultry pay and well. This is, however, amongst the fancier section of poultry keepers.

Whatever the form of poultry house there are certain things which must be observed if the inmates are to be comfortable, and without they are comfortable it is scarcely to be expected that they will thrive. These things can be obtained in the largest and in the smallest house alike, in the most simple as well as the most elaborate. In fact, the more ornate the house the more

danger there is that these necessary matters will be neglected. Fowls are like children—they do not like to be dressed up and made to conform to the restrictions of a drawing-room.

There are some people who prefer a low to a high house for poultry, the reason being that the former are usually warmer in winter. We do not, however, agree

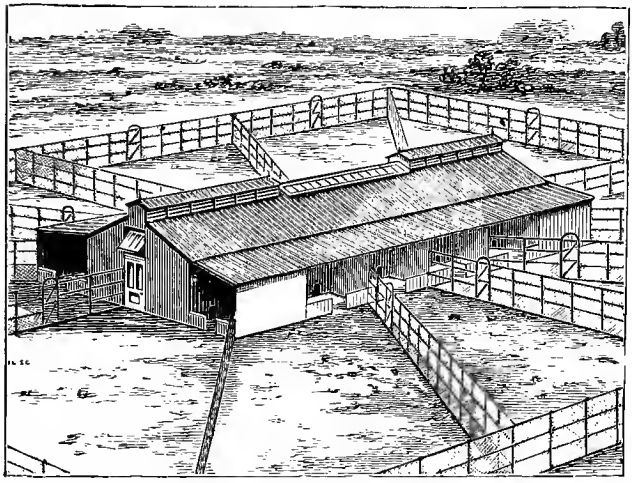

FIG. 1. COMPLETE POULTRY ESTABLISHMENT.
(*Boulton and Paul, Norwich.*)

with this, for it is almost impossible to properly ventilate low houses. If the birds are allowed to perch at all, which is necessary, except in the case of Cochins, Brahmas, and other feather-footed exhibition fowls, they will either have no ventilation provided or will roost in the direct line of draught—as bad an arrangement for fowls as for human beings. It is undoubtedly true that low-built houses are usually warmer in winter than

higher ones, simply because there is not the same air space. But this additional warmth is very dearly purchased if the inmates are to breathe every night a fetid atmosphere. The great advantage of a more lofty house is that ventilation can be secured without the least need for the fowls being exposed to any draught. And if the house is well built we do not think that the additional space thus afforded will add seriously to the coldness of the atmosphere in winter. Even if it does there are other ways in which this can be guarded against, or provided for. Our own preference is to have a roof about

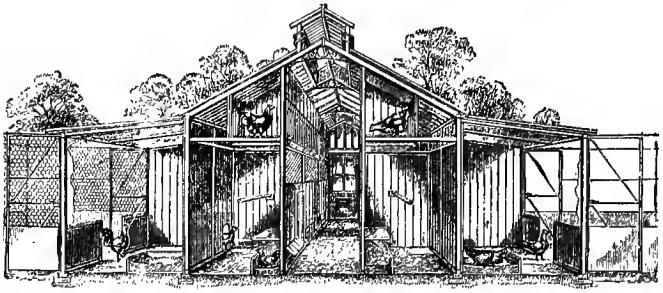

FIG. 2. COMPLETE POULTRY ESTABLISHMENT (SECTION VIEW).

three feet above the roosting perches, but if the roof be gabled it may with advantage be six or twelve inches more than that, the object of which is to allow for a ventilating chamber in the roof. This is, however, a question to which we shall refer later on.

The size of a poultry house is not an easy question to determine. But for medium-sized fowls, it may be taken as a good guide that one fowl should be allowed for every three square feet of space. That is, if the house is six feet square, it will comfortably contain twelve fowls all through the year, but in the autumn and winter three or

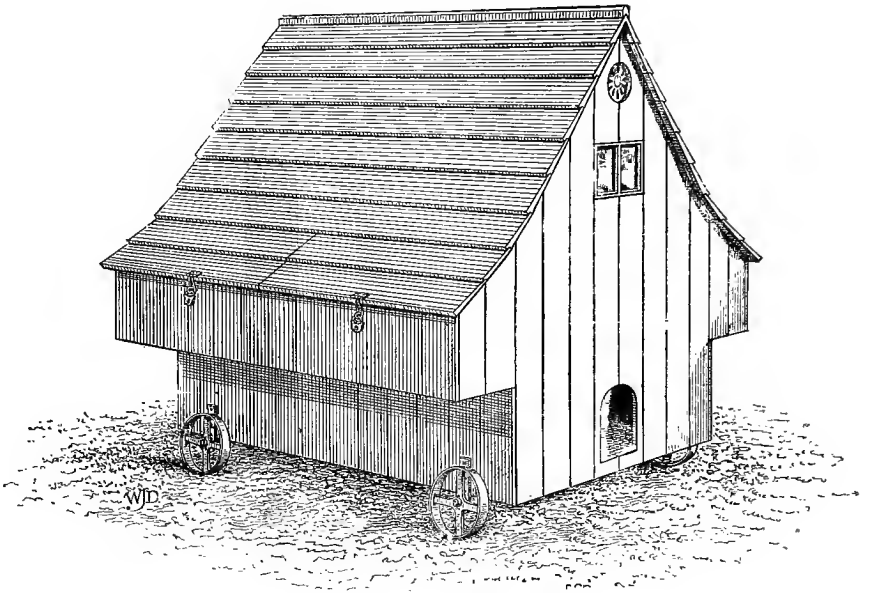

Fig. 3. Portable Poultry House.
(*Barnard, Bishop and Barnards, Norwich.*)

four more may be placed therein. If the fowls kept are of the larger breeds then the number in a house of this size should be reduced by two, and if of the smaller varieties it can be increased. More fowls can be accommodated when in addition to the house there is also a covered shed attached, and this is most desirable whenever it can be managed. Fowls do not like to sleep in the same apartment to which they go for shelter when the weather is unfavourable, or for their dust bath. A very great mistake is made by many poultry keepers through attempting to keep too many fowls in their houses. Overcrowding never pays, and many diseases and troubles which disturb domestic fowls are due to this cause. Therefore, if the space which we have allowed seems excessive, it is because of the very mistaken ideas on this question which are prevalent.

We have already mentioned a square house, but this is certainly not the best form. It is much better when oblong. Thus, instead of making it six feet square, we should prefer it to be six feet by five feet, and in the case of double houses this is very easily secured. An oblong house looks better than a perfectly square one, can be arranged equally well, and is more economical of space. We have seen very good houses made in all sorts of shapes, even octagonal—but these we do not like, and it may be taken for granted that any shape which gives pointed corners inside is objectionable. An octagonal house divided will give several V-shaped compartments, unless there is to be a centre chamber, and our opinion has always been that utility is here sacrificed to ornamentation. For single or double houses the octagonal form may be adopted if preferred. We are not much enamoured with the block system of poultry houses, preferring single or double ones, but the former have many

advantages for those who wish their fowls to be seen and attended to in the easiest manner, and can be worked successfully.

In this country it is customary to merely give as much light as will pass through a small sky-light, or a window let into the wall. In either case the window does not exceed a foot or eighteen inches square, and it is very often about six inches by a foot. This is, we think, a great mistake, and the American plan of giving a considerably greater amount of glass is the wiser one. Of course the object of limiting glass has arisen from the idea that as it is a rapid conductor of heat or cold, it makes the house hot in summer and cold in winter. This may be and is undoubtedly true, but the advantages to be derived from the using of glass more freely are so great that it is worth while seeking to obtain these advantages, and at the same time avoid the ill effects of either excessive heat or cold. That this can be done is proved by American experience, for in that country there are greater extremes than are to be found in Great Britain. We are, therefore, compelled to say that the custom which has been hitherto adopted in this country is a wrong one, and to urge that there be given a much larger amount of window space in our poultry houses. At the same time it is necessary to state that this must be done in the proper manner, or more harm than good will be the result. One window should face the east, so placed as to catch the early morning rays of the sun, and another may be on the west side for the purpose of receiving the last glimpses of old Sol, but the principal window should be to the south, and the latter may be considerably the larger of the three. The east and west windows should be placed rather high so as to secure the rays of the sun to the fullest extent. It is desirable that

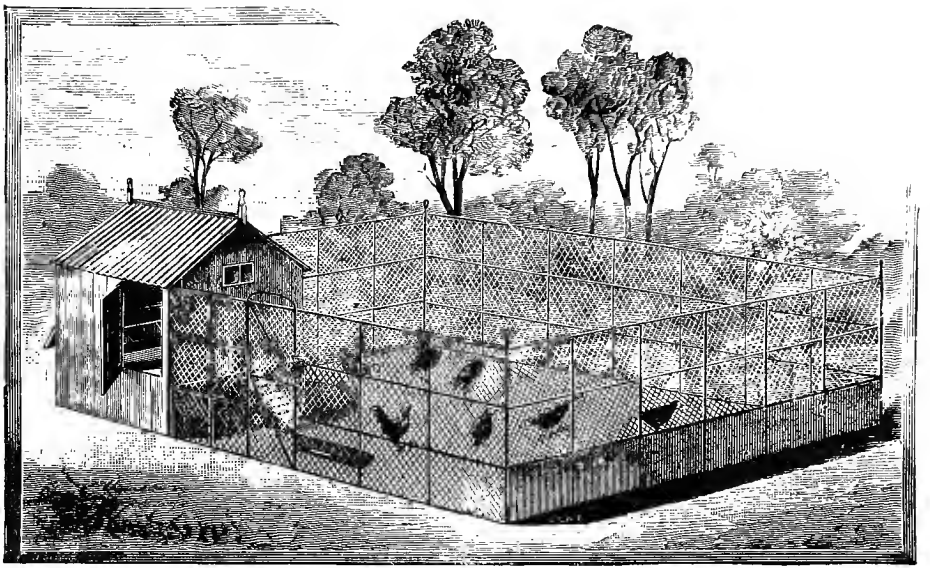

Fig. 4. Portable House and Run.
(*Boulton and Paul, Norwich.*)

one or more of these windows be made to open, which one depending upon the place where the house is placed. It is customary upon the part of writers on poultry keeping to say that the windows should always open upon the south side of the house. But this would be the very worst advice that could be given in some districts. The first time we ever visited a poultry establishment in the south-west district of England we were considerably astonished to see the windows facing the north. On inquiring the reason for this it was stated that there the most troublesome winds were those from the south-west, *i.e.*, from the Atlantic, and it was necessary to have the house facing in the opposite direction. The same end could have been secured if the highest side of the house had been made to the north, the opening window to the east, and the principal window to the south, for in that case all the benefit of the sunlight would have been secured, without any more exposure to winds. From this it will be seen that the arrangement of the house must be made to suit the conditions under which it is placed. We are, however, thoroughly of the opinion that the American system is the better of the two. But in order to overcome the rapid conduct of heat and cold it is necessary to use either very thick plate glass, or, what is much better, a double thickness of ordinary window glass, leaving a space between the two. The best windows for poultry houses are the sashes used in dwelling-houses. These are rather costly for this work, but the money will be well spent.

In all poultry houses it is necessary to have one large door for the use of an attendant, and a small trapdoor for the exit of the fowls. The position of both must in a large measure depend upon the position where the house is placed. It is, however, desirable under all cir-

cumstances to have them where the inmates will not be unduly exposed to cold or draught, for if put on the windy or exposed side it will scarcely be possible to keep the house comfortable. It is better also when a shed is attached to the roosting-place to permit the trap to open therein, both for protection and for the convenience of the fowls. The latter should be a foot wide and eighteen inches high, except for the very largest breeds, when it should be two inches wider and three inches higher. It should be covered with a sliding trap, and if there is any danger of robbers some provision should be made so that the latter can be fastened on the inside: two feet six inches is the usual size for the larger door, and the better it is fitted the more protection will there be against unwelcome draughts.

What material the house shall be built of depends so much upon local conditions and circumstances, that it is scarcely possible to recommend that which will suit all readers. Where the poultry keeper is landowner also, or has a certain tenure, the best thing to go in for is stone and brick, if either be available, for they will be found cheapest in the long run. A well-built poultry house has very much to do with success. Brick and stone are both warmer than wood and do not need so much attention when erected. They should be plastered out, and kept well lime-washed. But in many places, either because wood is much the cheapest material, or for other reasons, this latter is preferred, and of course for movable poultry houses it must always be used. The general mistake made is in having the deals too thin. I prefer tongued flooring deals seven-eighths or an inch thick, and a house so made and well put together will be very warm and comfortable, quite enough so for all ordinary requirements. The advantage of

using tongued boards is that they are less liable to allow of interstices for the entrance of air or water.

The roof can be made of various materials. On a brick or stone erection slates or tiles look best, but they are rather expensive. They, of course, last well. Corrugated galvanised iron sheeting has come into use very much of late years for poultry houses, and it is cheap, handy, and lasts well. But it is a very rapid conductor of heat and cold, and when used the inside of the roof must be lined out with wood, or the fowls will be either roasted or starved in accordance with the season of the year. Wood makes a good roof, but will not answer alone, and it must either be covered with felting or be well tarred and sanded. We have sometimes made a very cheap roof covering, by first tarring the wood, and then, while it was wet, laying on sheets of thick brown paper, tarring the whole over again two or three times. This, if each coat is allowed to dry before the next is put on, makes a splendid covering. A thatch roof is excellent.

Not the least important part of a poultry house is the floor. If this be not properly made, no matter how well done the rest of the house is, it cannot be right. A damp floor means a damp house. There is also another consideration. If the house floor be not capable of being kept sweet, then the atmosphere in the house can never be pure. This is a point upon which many poultry houses entirely fail. In process of time the floor becomes charged with ammonia from the droppings, and it impregnates the air day and night. What wonder, then, if the fowls do not thrive, and take all manner of diseases unaccountably. The floor I like best of all is peat moss litter. The floor is better dug out to the depth of eighteen inches, and half filled in with coarse gravel, burnt brick

ballast, or small stones, well beaten down. Above, the peat moss litter will be placed; it can be raked over daily, and renewed whenever needed. Failing this the best floor is made by having the layer below as already stated, but instead of the sand a compost should be prepared of cinder-ashes, fine gravel, quicklime, and water, well mixed together, and spread over. When hardened this makes a first-class floor. Cement is far too cold, and bricks absorb moisture from the droppings, so that neither of these materials should be used. It is desir-

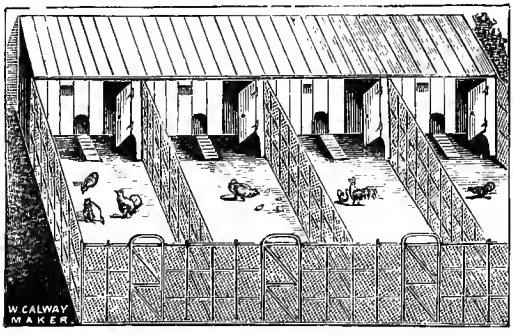

FIG. 5. RANGE OF LEAN-TO POULTRY HOUSES.
(*W. Calway, Sharpness.*)

able that the floor within the house be higher than the ground outside, for if lower it will certainly be damp.

The question as to whether a house should be raised from the ground or not is one that has only recently been settled. There can be no doubt that this arrangement secures two desirable objects, namely, a convenient shelter for the fowls in wet or hot weather, and at least expense; and economises space in crowded places. Where this plan is adopted the floor should be thickly

covered with peat moss litter, or the house will be cold and draughty.

There is another form of poultry house which is very often used, namely, the lean-to (see Figs. 5 and 6). This is very suitable for gardens, and especially where a wall can be utilised for one side or the back. In a cold, unfavourable position it is a great help if a wall is available in this way. These lean-to houses require to be built and to have the joints between the sides and walls properly made, or they are very liable to let in water. In gardens where the amount of space for

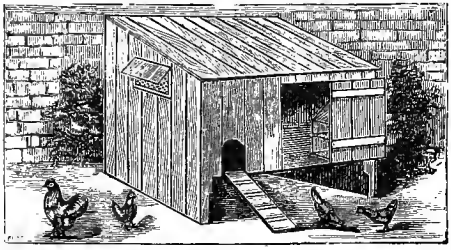

FIG. 6. LEAN-TO POULTRY HOUSE.
(*W. Calway, Sharpness.*)

poultry runs is very limited, they answer very well indeed, as the house and run need not be more than four feet wide, and have just as much length as can be afforded. The run should be at one end, or at both ends if there is available accommodation, with the attendant's door opening out on to the side.

When there are buildings already standing which can be adapted as poultry houses, an opportunity is afforded for a very welcome saving of first cost. It is indeed surprising the different places we have known utilised in this way. But it is very often the case that there are

old sheds, unused stables, and even unoccupied cottages which can very easily be adapted as poultry houses. As a rule these buildings have one very manifest advantage, namely, that they are better built than is usually the case with houses specially erected for fowls; and this is no slight benefit, giving an additional warmth which is so welcome in the winter season. It is a mistaken policy, but nevertheless a common one, for fowls to be sheltered in houses that no one would think of putting a cow into, because of the want of ventilation, or of the other requisites for proper housing. Therefore, when a house has been built for what we may term the superior animals, and can be given to fowls, the opportunity should be gladly welcomed, and, properly fitted up, it will make a splendid poultry house. The chief danger to be avoided in the adaptation of existent buildings as poultry houses, is that they are either damp, ill ventilated, or badly built. If any of these faults be found they must be remedied if success is in any way to be achieved. We have before mentioned the evil resultant from imperfect ventilation, and it is not necessary that we should say much more on that question. There is one thing, however, the worst ventilated houses can be improved in this respect if proper means be adopted, so that ill ventilation need not be an impassable barrier to the adoption of any building. Dampness is much more difficult to remedy. It is generally found in old buildings, in which it seems to have taken a firm hold of the walls. Into a house like this it would be most dangerous to put any living thing, and certainly would be fatal to success with poultry. How to cure dampness in walls is a question which cannot be settled offhand, as it puzzles builders greatly. Something can be done by heat, but even that is not a perfect cure. We have known coating the walls

with tar both inside and outside effect the purpose, but this plan sometimes fails, and it seems impossible in some cases to find a real cure for dampness, as it has entered into the walls, and appears to attract moisture from wherever it is to be found. Not nearly so serious is it when a house is badly built, for that can generally be put right, either thoroughly or sufficiently for the requirements of our fowls.

The commonest form of portable poultry house is that upon four wheels with a wooden floor. A very handy

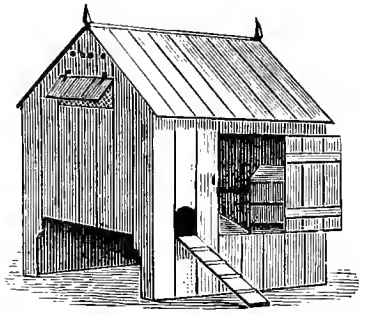

FIG. 7. PORTABLE POULTRY HOUSE.
(*W. Calway, Sharpness.*)

form of house, and a very cheap one, is made with four handles, so that it can be carried by a couple of men. This, if four feet by three feet, or three feet six inches, is large enough to hold twelve to fifteen fowls, or twenty to thirty chickens, according to their age and breed, and it can easily be carried by two men. It need not be more than five feet in height at the front, sloping down twelve or fifteen inches to the back. The handles for carrying are best made part of the structure, really being the centre horizontal joists carried out two feet at either end.

Many forms of poultry houses, both portable and permanent, are sold by various appliance makers, particulars of which will be found in our advertisement pages. Some of these are here illustrated.

One of the finest poultry houses which we have seen is that at Windsor Park, about two miles from the Castle, near to the late Prince Consort's home farm. This consists of a long ornamental building, built upon a terrace, in front of which is a sheet of water, and as the centre carries a low tower, the appearance is very pleasing. The building proper is about two hundred feet long, divided into ten compartments for poultry, with a large sitting-room in the centre, wherein the Royal Family were wont to enjoy the luxury of new-laid eggs. Each of the compartments has in front a wire run, connected with the building by a trap-door. These runs are raised from the ground, so that the fowls are on a level with the passer-by, and the birds here show themselves to the best advantage. These runs are gravelled, and, we need hardly say, are well kept. In fact, these are but the drawing-rooms of the establishment, where the birds come out to see and be seen. The whole appearance is that of a well-made erection, largely built of wood, fronted with wire runs, and a central house surrounded by a neat tower, of which the compartments may be said to form wings. Each compartment contains a pen of fowls, usually a cock and five or six hens. To all the compartments is a covered run, and when we go to the back of the establishment we find that there are other runs, which really form the regular open-air resort of the fowls. The runs at the front are for show, these for use. There is nothing special which need be said about the runs. They are of the ordinary kind, divided off with fencing, and connected

by gates. They are well sheltered by trees. The appointments about the place are of a practical character. Behind the poultry houses most of the work is done. During the hatching season coops are placed out here and there with chickens, but the chickens are reared in runs among the trees, where they are not seen from the front. Thus her Majesty's poultry yard consist of two sections, the ornamental and the practical, and where there is plenty of space at command, as is the case at

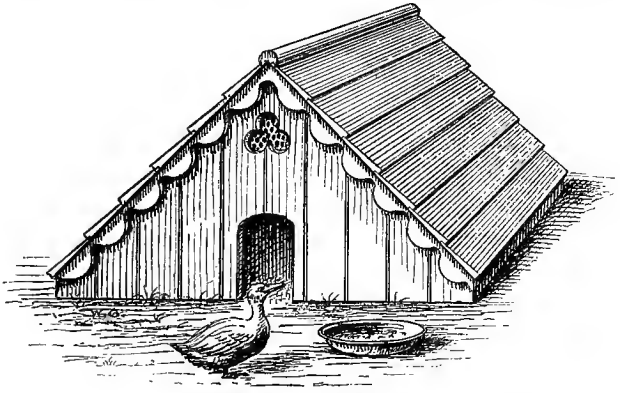

FIG. 8. DUCK HOUSE.
(*Barnard, Bishop and Barnards, Norwich.*)

Windsor, there is no reason why this should not be so.

The sheet of ornamental water in front of the terrace is meant for ducks. But very wisely the number of birds kept on it is small. In such a place one important element is that appearance shall be regarded, and this would be impossible if many ducks were kept. Their dirty habits make it undesirable that they be allowed on a sheet of water, except in very limited numbers.

The Countess of Aberdeen has a very fine poultry house at Haddo House, Aberdeenshire. Taking it all round it is the best house we have seen for practical arrangements and handsome appearance.

The main poultry house, though justice cannot be done to it in any illustration by reason of the great mass of wire netting, stands in the park, about five hundred yards from Haddo House, and near to the monument erected in memory of a member of the family who fell at Waterloo. The building is a most substantial one, with slated roof, and is excellently designed. There are fifteen rooms in all, each about twelve feet square, plastered out, and whilst most comfortable, carefully ventilated and well lighted, are not ornate. Doors at the back open on to a raised terrace, and others into runs in front, so that the attendant's work is simplified greatly. The floors are concreted below, but above is a well-beaten bed of chalk, and on the top a thick layer of earth and gravel mixed. The runs are nearly seventy feet long, eighteen feet of which is laid in gravel, and the remaining portion grass; six feet of the first run has a roof above for shelter, and as the house faces to the south, and is backed by a good belt of woodland, it is in a most favourable position. The fencing is of netting, but boarded up three feet from the ground, and the doors are wide and well hung. We must not forget to mention one of the best arrangements for water we have yet seen. Each run is fitted with an oblong metal trough supplied through a tap from a tank near by. To empty, a plug is lifted, and the whole can be cleaned out easily and swiftly. Fresh water is an essential for fowls in confinement, but often it is forgotten or neglected.

It is always desirable to have a special house for chickens when there is any considerable number bred.

This house should be placed within easy reach of the poultry attendant's dwelling, so that he can visit it at all hours of the day and night, be it wet or dry, for chickens need attention both early in the morning and late at night. Chickens in one of these houses can be reared with greater ease at all seasons, as they are completely protected from the bad weather, and, as we have already said, the attending to them is very much more comfortable than when they are outside. Not only so, but the chicken house can be used as a place for hatching, and after chicken rearing is over either for fattening or as an ordinary fowl house. Thus it will be useful for several purposes.

CHAPTER III.

HATCHING AND REARING—NATURAL.

Being in time—Numbers to be hatched—Buying eggs—Fertility of eggs—Testing eggs—Place for hatching—Hatching boxes—Daily examination—Moisture—Hatching register—Periods of hatching—Chicken rearing—Coops—Change of ground—Runs—Necessity for shelter.

It is an acknowledged fact that many poultry keepers do not prepare in a right way to meet the requirements of each season, but leave too much to chance. They are content to set hens just when their own become broody, and only then if they have plenty of eggs. They do not strive to take time by the forelock, or to make it do their bidding, but are content to follow in its wake, just when and where it leads them. This is not the way to obtain any measure of success, and hence it is that so many find poultry keeping does not pay. The object should be to divide up the work of hatching so that it can be properly done, and not to leave it to come down with a rush, probably to be then neglected. Everything should be prepared for in advance. Far better be a month ahead than a day behind. In the one case you can wait for the proper time, but in the other it will never wait for you. Too many poultry keepers neglect this preparation altogether, with the result that they do not begin to

hatch table fowls until they should be leaving off, nearly at the end of February, and they are thus hatching out their laying fowls in June and July, with the result that in the former case they have to sell their produce when there is a glut in the market, and the prices are low; and in the latter case the birds do not commence laying before the winter sets in, so that they have to be kept eating their heads off for months, commencing to produce eggs when they are plentiful and not when they are scarce. This is no overdrawn picture, but one that can be verified in many instances, and we daresay is the case with some, at least, of our readers.

To indicate the better way, let us suppose that a poultry keeper wishes to hatch out, say, fivescore birds, to be sold as chickens during the spring, and as many pullets to be laying stock next winter. Of course, if he could obtain a guarantee that every egg set would hatch, and that the exact number of cockerels and pullets required would be obtained, then the work would be very much simplified. But this cannot be, and therefore an allowance has to be made for bad hatching, &c.

Taking table fowls first, we may explain that pullets which have not laid are quite as good—some say better—for table purposes as cockerels, so that if the birds are hatched out, it does not matter much of what sex they are. Pullets are somewhat the smaller of the two, but this is the only disadvantage. Eggs are by no means so fertile early in the year, and consequently more should be set than would be necessary later on. As we have about six weeks to work in, it will be a good plan to equally divide it, and to set three hens each week for that period. Allowing an average of eleven eggs to each hen, this will give 198 eggs, and if only half the eggs hatch out will give the number

required. Probably the total may not be quite so low as this, but that will be all the better. The advantage of dividing the hatching in this way is that the chickens do not all come out together, and can be attended to better than if they did. Also, if the earlier batches prove a failure, more can be put down, and so prevent the entire season being lost, which would be the case if the hatching was crowded into two or three weeks, and by any chance be bad.

So far as laying fowls are concerned, the arrangements for them should be conducted in a similar manner, but with these there are one or two other eventualities to prepare for. In this case pullets are wanted, and there must be enough birds hatched to allow for the number required. As the sexes generally come out about half and half, this means that double the number of birds must be hatched—that is, two hundred—and the cockerels can be killed off when they are fit, or such of them as cannot be sold alive afterwards. Eggs are generally more fertile later in the season, and hatch better also, so that it is not in this case necessary to allow so large a margin as in the case of table birds; and in addition to this advantage there are ten weeks in which the work can be done. If, therefore, three hundred eggs are set, they should be enough to obtain a hundred pullets. Twenty-four sittings, allowing thirteen to each hen, will be 312 eggs, and they can be divided in the following manner: Three sittings each of the first four weeks, and two each of the remaining six weeks—twenty-four in all. In this case also, if the earlier hatches do not come out well, there will be enough time to make up by setting more than the numbers stated for later on. Of course there may be individual reasons why the plan laid down here should be varied somewhat, but in most instances

it will not be found at all difficult to carry out. Such a system is very simple indeed, and there is less trouble involved; less, in fact, than in the way now so general. These remarks apply equally where artificial methods of hatching are employed.

The process of egg formation and evolution of the chicken is deeply interesting, and well worthy of study. But in such a work as the present the limitations of space preclude our dealing with it. Full particulars of it are given in the author's work on "Poultry Keeping as an Industry for Farmers and Cottagers," which should be referred to for fuller information.

Many people prefer to commence poultry keeping by purchasing eggs, and hatching out the chickens, which in the following autumn will come on as layers, and under some circumstances this may be the better plan. At any rate it is a very popular one, as the demand for eggs proves; it is no uncommon thing for a first-class breeder to sell £150 worth of eggs from one variety during a single season. Many good breeders sell eggs from capital birds at reasonable prices; and by this we mean 5s. to 15s. per dozen, which may appear high to those unaccustomed to buying in this way, but is not so really when the result is thought of. The layers have to be well housed, well cared for, the eggs selected and sold at a time when they are scarce and dear, and, more than all, the prospective value of the chickens must be taken into account, for every egg laid during the early spring may produce a chicken, which will be of value later on. To pack a sitting of eggs properly for transit by rail costs about one shilling, and therefore the prices we have mentioned are fair to all concerned. Generally when two sittings are taken a reduction is made, and, of course, if there are good breeders near at hand, and amongst

friends and acquaintances, they can be bought cheaper, though if the seller be an exhibitor he will probably refuse to sell by reason of future competition. Unfortunately there is room for much swindling in the selling of eggs, and a great deal of unfair work undoubtedly goes on, which needs to be guarded against and exposed.

This leads us to the question of the fertility of eggs, upon which there is considerable ignorance. We once sold a sitting to a gentleman, and after the usual three weeks he came to us in a very bad temper, because no chickens had come out. He was inclined to think we had swindled him, and made a strong point of the fact that every egg was rotten. Considerable indeed was his surprise when we told him "we were glad to hear that," but when it was explained that infertile eggs never become rotten, but simply yellow and fusty, and the eggs being rotten showed that incubation had commenced, he immediately saw that we were right, and altered his tone. Therefore, in purchasing eggs, should any or all fail, do not be unjust to the seller. If at the seventh day a large proportion are clear, take them out and offer to return them to the breeder as proof; but should those that are opaque fail in hatching, he must not be held in fault.

A very useful purpose is served in testing eggs by candle-light at the seventh day, for the unfertile eggs can be removed and the work of sitters economised. The method of testing is thus described in "Poultry Keeping as an Industry for Farmers and Cottagers": "Coming to the method of examination: first remove all eggs from the nest either when the hen is feeding or after lifting her off for the purpose, and hold them between a candle or lamp and the eye. The best time to do it is

at night, and a candle can be placed at a convenient height for the purpose. Then take an egg in the left hand, holding it between the forefinger and thumb, using the other fingers of the hand as a shade to keep the light from the eye. The right hand is next put around the part of the egg left exposed, and the fingers of that hand used also as a shade. The object is to only permit the light to be seen by the eye through the body of the egg, and a very little practice will enable any one to hold it properly. Some use cardboard, cutting in it an oval hole scarcely so large as the egg, and there are also egg-testers sold at about one shilling each, made of tin partially covered with black cloth. These are perhaps the simplest, though we have always been able to test more quickly when using only the hands, as already described. When the egg is fertile there will be seen, at the seventh day, a large black spot in the centre of the egg, covering it so that it is perfectly opaque, but getting lighter in colour nearer the edges. If the examination had taken place a day or two earlier there would have been seen a small black spot in the centre, and a host of small streaks, or veins, radiating from it. But at the seventh day these cannot be seen, for the chick is beginning to assume more of its natural form. This opaqueness shows that the egg is fertile, for an unfertile egg is clear to the end, no matter how long it is sat upon. Some people we have met who would not accept this test; they thought that perhaps the chick would develop if sat upon a little longer, but every fertile egg by the seventh day has developed sufficiently to declare itself in an unmistakable manner. We have sometimes been deceived when testing incubator eggs at the third or fourth day, but never at the seventh, and thus it is better, as a rule, to accept that time as a right one for applying the test." A further test is by water

at the nineteenth day. This is heated to 104°, and in it the eggs are placed. Those containing live, healthy chicks will float and dance about, whilst "dead eggs" will sink and remain quiescent.

We now wish to show some of the methods by which success can best be obtained. The first is the selection of place, and upon this very much depends. If only one or two hens are to be set during the season, then an out-house or an unused part of the fowl house may be put on one side for that purpose; or, again, if there is a coop at liberty the hen may be allowed to sit in this on the ground, but not during very cold weather, for it would probably result in the hen deserting her nest. The best way when there are several hens to be set is to select some room as a hatching place, and do all the work therein. This may be an empty fowl house, an unused stable or coach-house, or a loft; in fact almost any place will do so long as it is somewhat even in temperature (rather cool than otherwise, we prefer, so long as it is not actually cold), and it must be perfectly ventilated. It is necessary also to see that it is not damp overhead or actually wet below, and we like it best when it is rather dark than otherwise. There are few who have not a place which meets all the requirements here enumerated, and we suggest that such a place be selected for the purpose of a hatching house. In a loft above a stable, measuring about eight feet square, we have had a score of hens sitting at one time, and the facility with which we were able to attend to them made the work comparatively light. In fact, twenty hens could be attended to just as easily as one-fourth the number scattered about.

It is hardly necessary to say that in a room or house where several hens are sitting together, some arrange-

ment must be made to keep them separate and out of sight of each other, both during the time of sitting and whilst feeding, otherwise there will be constant warfare, which will only end in the destruction of the eggs and the killing of the chicks within them. To secure this there is nothing better than hatching boxes (Fig. 9). These are about fifteen inches square and eighteen inches high, with no bottom, but with sides and top only. The front is made a door, so that by it the birds can get in and out, and holes in the top and sides give the necessary air both to hen and eggs. These boxes can

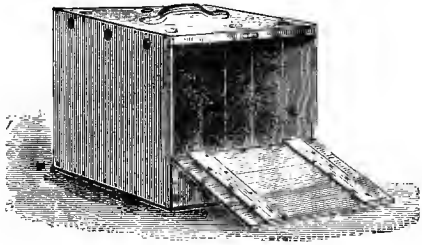

FIG. 9. HATCHING BOX.

stand side by side, but it is well, for the better circulation of air, to have them about six or eight inches apart, and thus it will be seen that a medium-sized room can hold a goodly number. Below the boxes is placed a layer of sand or soil, three or four inches thick. The hens can be allowed out to feed in turns once a day by simply opening the door in front of each box, and the eggs will then secure the necessary cooling. The advantage of a plan like this is that the variations of temperature outside do not affect the hens so much as if they were set here, there, and everywhere, and consequently many a sitting of eggs is saved which would otherwise

be lost. We also show set of nesting boxes, which may be used either for laying or sitting hens (Fig. 10).

There is another plan, which we saw in use at the establishment of a well-known breeder, and which is excellent. This gentleman has coops made of a triangular form, about twenty-four inches long by twelve inches wide, and twelve or fifteen inches high. There is only one end to the coop, the other end being perfectly open. Fitting on the coops are runs, also triangular in shape, but instead of both sides being of wire lattice as

Fig. 10. Nesting Boxes.
(*Boulton and Paul, Norwich.*)

is usual, one is made of corrugated iron, the other side and one end being of wire lattice, the opposite end quite open. When it is used, either as a hatching pen or coop, the run is put over the open end for a few inches, it being made large enough for this purpose, and thus effectually keeps the hen in and intruders out. These coops can, of course, be used for hatching out in the open, or indoors, and if put side by side the hens will be provided with a good roomy hatching box, and if food and water are placed in the run they can come off for

feeding whenever they are disposed to do so. The gentleman at whose poultry yard we first saw this plan adopted had some six or eight coops and runs in a coach-house, the floor of which was thickly covered with sand. The corrugated iron sides were useful here also, as they effectually prevented the inmate of one coop seeing the others. He had reversed the ends of the runs, so that for convenience in cleaning and arrangement half the coops were on one side and the remainder upon the other. Nothing can be simpler than this plan, and the advantage of being able to use the coops both as hatching boxes and coops is a saving of cost, for in the former case the boxes can only be used for hatching purposes. There is just this disadvantage, however, that twice the number of hens can be accommodated in a room fitted up with the hatching boxes, to where there are the runs just described, but in the latter case this may be balanced by the fact that the time required for attention is much less. Where time is a question of importance, this would be the better plan.

It is to be noted that the attention given to a hen during the period of incubation must be constant and regular. She must have corn and water daily, and be permitted to come off her nest once or twice a day—lifted off if she will not come voluntarily, as she will assuredly foul her nest if too close a sitter. A dust bath should be provided for her, otherwise she is sure to be infested with insects, and give these to the chicks when they are hatched. The prevalence of gapes, we are inclined to think, is due more to this cause than any other. When the hen is off feeding the nest should be examined every day to see that it is all right, for sometimes eggs roll away, though if the nest has been properly made this should not be so. Sometimes, also, an egg has been

broken, and if this takes place, or if the nest is fouled, all the eggs should be placed in a pail or bowl of water heated up 105 degrees, and then properly washed with a sponge. The nest should then be re-made and the eggs returned to it; but before the hen is allowed to return, her breast, thighs, and legs should be thoroughly washed, for if this is not done some of the eggs will probably adhere thereto, with the result that more will be broken. We have known a whole nest spoiled from so simple a cause as this.

Then there is the question of moisture. This is most important, more important than many persons are prepared to admit. If it is not attended to the eggs will be dried, and the chicks, if they come to maturity, will be unable to break their way through the toughened shell and skin. Moisture passing in air through the pores of the shell, soften it by carrying particles of lime within, and so prepare the shell for easy exit of its inmate. The reason why we always make so strong a point of having a good layer of soil below the hatching boxes, and also in the bottoms of the boxes themselves, is that moisture may be given in the best way, namely, by keeping the soil damp, not wet, thus supplying the eggs with all the moisture they require. The water should not be poured upon the nest, but round the box, and it must be regulated according to the season of the year. In early spring a pint of hot water twice a week will be sufficient, but in warm weather this quantity every day will not be too much, as the atmospheric evaporation is then much greater than in colder weather. It should be noted that duck and geese eggs require more moisture than do those of hens.

It is an excellent plan to place a register on every hatching box, using the same when an incubator is

employed, showing particulars as given below. This will be most convenient if in the following form :—

Breed of Eggs .....
Date Set.....
Due to Hatch .....
No. of Eggs .....
No. Fertile on 7th Day .....
Eggs Broken .....
Chickens Hatched .....
Remarks.....
.....

The periods of hatching are as follows :—

Fowls.....	21 days
Ducks and Turkeys.....	28 ,,
Geese.....	30 ,,

But often when eggs are quite fresh, which is most desirable, they will hatch a day or two earlier. Every day after an egg is laid the germ loses somewhat of its vitality, and to secure hardy birds new-laid eggs are desirable.

Successful chicken rearing needs careful management. It is of no use pretending that this is not so, for that would be misleading. But, given the willingness to spend the time and trouble necessary, success is within the reach of all. We have known some of the best and healthiest fowls hatched and reared under most unfavourable circumstances. In other hands the whole thing would have been a miserable failure. But the secret was not far to seek. It was simply that the attendant knew what was required to be done, and did

it. Knowledge is good, but knowledge without application is useless. Whilst there is this danger of neglect, another danger is equally to be avoided, namely, that of pampering. Amongst poultry there is as much harm done by overkindness as the opposite kind of treatment. Ninety per cent. of the diseases which trouble domestic fowls are due to injudicious feeding. Thus, what is needful in the management of chickens is to strike the happy mean—to give the birds all the attention they really require, but at the same time not to go to the other extreme and ruin their constitutions by pampering.

The treatment of chickens when hatched will much depend upon the time of year when that operation takes place. If the weather is open and mild, the hen and chickens may be put out in the open air. Removal of the coop to fresh ground and proper feeding will be the most important duty. Not much need be said with respect to coops. Almost any coop which is roomy, well-made, shelters both by night and day, and has a loose floor, will serve the purpose. A loose floor is most desirable, in order to facilitate cleaning. Then each time the coop is removed to fresh ground, which should be every day, it can be properly cleaned out. When the weather is cold or stormy, it is better to have a chicken-house in which to place the coops. This is, in fact, almost essential where very early chickens are bred, and its cost will soon be saved by the greater success attained in rearing. If this is not practicable, a coop may be employed which will give greater protection than those ordinarily used. We came across an excellent form in France, and, recently looking through an old magazine, saw one of the same kind described there. It is really a double coop, consisting of two compartments. The whole

is fifty-four inches long by two feet from front to back. At one end is the nesting-place, two feet by eighteen inches; this is boarded all round, and also has a partition between, separating it from the rest of the coop. In this partition a small outlet large enough for the hen to pass through is placed. The other extreme end is also boarded all round, but here is no partition, so that the inner side is open altogether. The centre of the front, which occupies eighteen inches, is formed of laths sufficiently apart to permit the chicks to pass through, but not the hen. The nesting place and shelter at the other

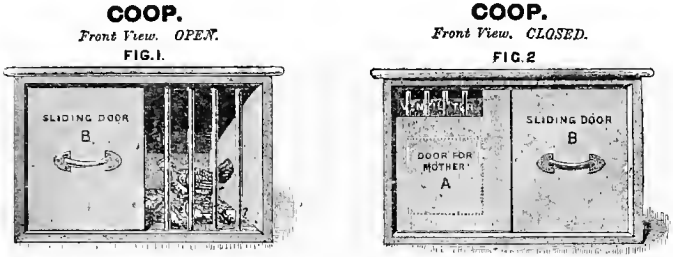

FIG. 11. DOUBLE COOP.
(*W. Calway, Sharpness.*)

end of the coop have wooden floors, movable for cleaning purposes, but the centre has no floor at all; the top of the coop may either be gabled or a simple lean-to. For rearing early in the season where there is no proper chicken house, this is by far the best arrangement we have yet seen. It has the very desirable advantage of giving the hen considerably more room than is usually the case in coops, not compelling her to live all day where she and her brood sleep at night. It also provides admirable shelter for the chicks in bad weather. It has other uses. When the hen deserts her brood, if the coop is

not wanted again for younger chickens, it makes a capital home for a few weeks for the orphans, and a perfectly safe one. Later on in the year it can be turned into a house for a single cock which it is desirable to keep by himself. Fig. 11 shows a coop made on this plan.

So much for the coop. We have already mentioned the necessity of a constant change of ground. This, of course, applies to those chicks that are placed in the open air. Unless attended to they will never thrive. It is, indeed, surprising that they so soon foul the ground, but if a coop with ten or a dozen chicks is put out, the grass will be bared in twenty-four hours. Even if they do not completely eat off all the grass, it would be desirable to remove the coops, as the turf can be kept in better order in this way. By thus changing, the coop may be placed on the same place a week or ten days afterwards, and the rest will have made it as fresh as it was before being used. Grass is a great help to the chicken rearer, when it is at command, but it cannot be regarded as indispensable. Thousands of birds are reared every season, and successfully reared, which have never had a grass run. Of course, when such a run cannot be given, green food in some form must be substituted; but this question will be dealt with later on. In a chicken house it is better to have peat moss or sand on the floor than anything else. This will only need renewing once a year at least, but it must be well raked over daily, and the droppings removed, and dug over once or twice a month. Wherever chickens are kept it is most important that cleanliness be observed. Unless attended to insects and vermin will annoy the birds, and under these conditions they cannot be expected to thrive. After each batch has occupied a coop, the latter should be well ime-washed out, and the floor ought to be covered every

day with fine ashes, dry earth, or sand. The question of feeding is of so much importance that we shall deal with that subject separately in another chapter.

In rearing chickens we believe that one great essential is liberty. Otherwise the same success cannot possibly be attained. All young life needs room to expand, and any restraint on the exercise of what will there is in them tends to stunt the growth. The mind, or what does duty for mind, has a wonderful influence upon the body, and even that which is an imaginary restraint is injurious. We do not mean that chickens must be allowed to scatter themselves everywhere, but it will be found in practice that they do not go very far from the coop. Still, if they have the opportunity, it is sufficient whether they do so or not. This is the objection we have always had to fixed runs with coops. In some places they must be used, and then there is no help for it. However much better they would be with a run, they have to put up with the restraint. But when chickens are kept in a run, there is sure to be something just outside that they want, and because it is not to be secured they are miserable. Even human nature is found to be reproduced in the lower orders of creation. If the use of runs can be dispensed with they should, and the chicks will thrive all the better for liberty.

The best position for coops is facing the south, and if protected from the north and east, either by a stout hedge or the natural conformation of the ground, it is preferable. Wherever possible, that is where other conditions fit, the benefit of bushes or a small plantation should be utilised. Bushes and trees shelter, but they do more. Part of the natural food of fowls are insects, grub, and worms, and these abound more amongst bushes than on open ground. If the actions of

fowls are observed, it will be seen that, when they have the opportunity, much of their time is spent in catching the one and seeking for the other. That chickens can be reared in small runs, where bushes are not, is unquestionable, for thousands are so reared every season, but to make the best of them, to produce healthy, hardy, large birds, liberty is a most important part of the business. Where space is not available, then the best that can be must be done under the circumstances. There is this to say, however, that when in a run fresh ground must be given every day. The best way is to move the coop a little.

CHAPTER IV.

HATCHING AND REARING—ARTIFICIAL.

Antiquity of artificial system—Incubators: Hearson, Westmeria, Charlan, Keay's, Christy's—Effect of vibration—Limitations to artificial hatching—Place where kept—Artificial rearing—Brooders—Where to be placed—Cleanliness—Heat—Teaching the chicks to feed.

THE system of artificial incubation is no new one, so far as hatching chicken is concerned. It has been extensively practised for many centuries in Egypt, China, and Siam, and we believe this fact explains why so many of the Mediterranean races of fowls have the sitting instinct suspended. In those countries the climatic conditions are favourable to this process, in that there are not the atmospheric variations found in temperate climes. Many attempts have been made to solve this problem, both in England and France, and the records of our Patent Office show that machines of all kinds have been invented. Some of these were very ingenious, and commanded a considerable amount of attention. Perhaps the most notable was Cantello's Incubator, which sought to copy actual contact as in the hen itself, and this invention was watched with great interest by the late Prince Consort. Those, however, which proved the most successful were far too intricate

and expensive for ordinary purposes, and it was not until the Paris Exhibition of 1878 that any practical results were arrived at. Thereat was shown what was afterwards known as the Hydro-Incubator, in which a much larger body of water was used, and the date named marks the beginning of a new era in the history of this question. But the machines in question en-

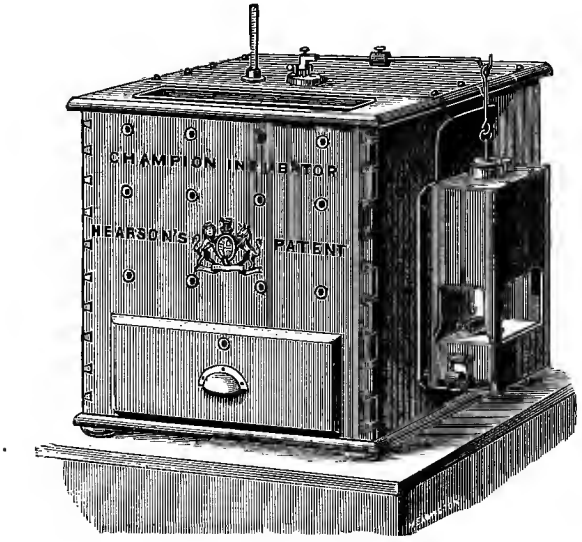

FIG. 12. HEARSON'S INCUBATOR.

tailed considerable labour in refilling the tank twice a day.

Shortly after the above date an incubator was introduced by an American gentleman living in London, and this has proved the most reliable and successful of any machine yet invented (Fig. 12). It is to be found in all parts of the world, and works in the most simple and

effective manner, being well thought out and carefully made. The chief feature is its regulator, which is so susceptible that we have worked it three months without the variation of half a degree. This regulator consists of a metal capsule about three inches square and half an inch in thickness. Within is a fluid which expands enormously, whenever the heat in the egg chamber attains more than 104 degrees. The force thus generated is made to let off the heat from lamp or gas before it can pass through the water tank, and thus the temperature begins at once to fall. Excellent arrangements are made for supplying moisture, which is of equal importance to heat, so far as success in hatching is concerned. We have come across many instances where every fertile egg has been hatched by this machine, and we believe that the provision made for fresh air in the Hearson Incubator is also accountable for much of its success. Few people realise the necessity for pure, fresh air to secure success in hatching.

Another excellent machine is that known as the "Westmeria" (Fig. 13), made by the Westmeria Co. at Leighton Buzzard, which, however, works upon a different principle, namely, by heated air, which passes from the lamp into a chamber above the eggs, in which is a side flue, operated upon by a regulator, so that when the requisite heat has been attained it is at once turned off, and the temperature falls. Here also satisfactory arrangements have been made for a proper supply of moisture, and in a twofold manner, the importance of this point being fully recognised, for without moisture the chicks are unable to make their way out of the shell, which is thus toughened in the process through the want of it. The air entering the egg chamber is warmed, and all danger of chilling the eggs is avoided. A valuable

feature of this machine is its provision for turning the eggs—a necessity. When a hen is sitting she turns her eggs very frequently, if not constantly, but when eggs are in a machine this must be done once or twice a day, or the contents will adhere to the shell. In the "Westmeria" Incubator the eggs are laid upon rollers, connected with knobs outside, and it is only necessary to give each of these half a turn whenever it is desirable to turn the eggs.

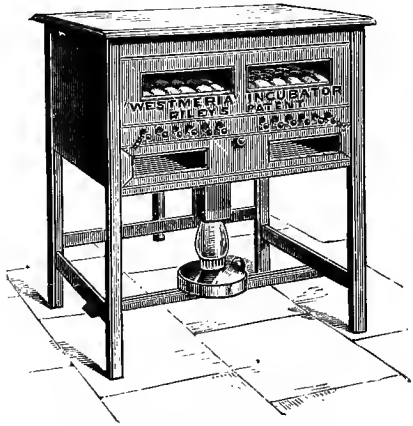

FIG. 13. WESTMERIA INCUBATOR.

In addition to these machines, there are several others on the market. With them we have had no personal acquaintance, but have had excellent reports of the incubator made by Messrs. Charlan & Co., of Oldham, in which the regulator is a Thermostatic bar. The egg drawer is so divided that each row of eggs can be easily turned, without interfering with others, and fresh eggs can be placed in the machine with a very minimum of danger in chilling those already in.

The principle of electricity has been applied to Keay's Patent Incubator (Fig. 14), and successfully. This is no new thing, for we worked by means of an electrical battery fifteen or sixteen years ago; but the application is decidedly better than we then adopted, for our object was to turn down the light, whereas Mr. Keay makes it to raise a damper, and so provide for the escape of heat, as in the Hearson machine. The heat generated in the

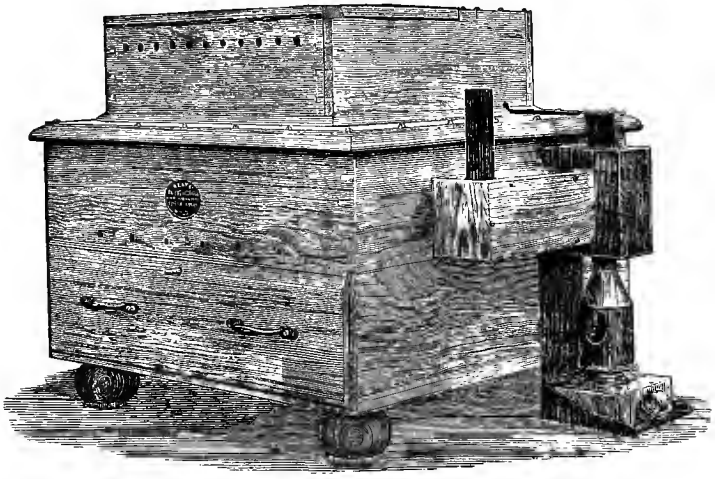

Fig. 14. Keay's Patent Incubator.

lamp is fully utilised, in that the flues pass through the water tank four times before it can escape when the damper is at rest.

The Christy Thermostatic Incubator, has been greatly improved of late, both in connection with the Thermostatic bar, which is really now a spiral coil, and also in the different application of its energy. Not only does it raise a damper, and so allow escape of the heat gene-

rated, but at the same time it shuts off the heat from the lamp, and thus none can possibly pass through the water tank.

A word of warning is required as to the importance of keeping the machine clean, and all its parts working smoothly. It is also most desirable that there should be no shaking and jarring in the room where it is placed, for this would mean deformity in the birds. We recently came across an instance showing the importance of observing the latter point. A large number of deformed chickens had been hatched, due to a badly fitting door, which had to be slammed in order to shut it. Any building in which there is a constant vibration from the working of machinery is, therefore, unsuitable for accommodating an incubator.

Thus far we have obtained an idea of the advantages from the use of incubators, and it may be fairly asked whether there are any limitations to such use and to those who may use them. To this question we have, in all fairness, to answer "Yes," and these limitations we will now endeavour to state. In the first place, it is scarcely worth the while of any one buying an incubator if he only hatches two or three dozen eggs during the year. Of course, if desired for the pleasure of working, well and good, but we are here dealing with the question from another point of view, and it is a decided waste of money and effort to buy a machine and only obtain from it about one-twentieth of its capabilities; something like using a forge hammer to crack a nut—interesting as an experiment, but not profitable. And whilst small machines are made they are not generally, we fear, so reliable as are larger ones. But to those who wish to hatch one or two hundred chickens, then an incubator may be of very great assistance in the work.

There are still other considerations which must not be forgotten. A machine will work steadily if of the right kind, but is not absolutely automatic. A hen knows what to do, and at what time, instinct teaching her, but an incubator cannot do this. It will run upon certain lines if guided thereon, but only in that way can it be made to do service. There must, therefore, be proper attention—attention of a sensible kind, regularly given. Whatever be the make of a machine, whether hydro or worked by lamp, it is absolutely necessary that there be perfect regularity in looking after it. Refilling the tank, trimming the lamp, and turning the eggs, are all details of management which cannot be neglected without injury being done. Too often are such matters overlooked, and then the blame is put on the innocent incubator.

And again, there is the question of a proper place in which to place it, which we regard as one of the most important considerations before a machine is bought. Such a place should be even in temperature, warm if possible; it should be well ventilated, yet free from draughts; if somewhat moist it will be all the better, but if not this can be easily remedied; and we prefer it to be somewhat dark. It should, of course, be clean and free from smell, as the atmosphere in the room is that breathed by the embryo chickens, and if contaminated cannot possibly be good for them. We make no limit as to the actual place, but simply state the conditions. Nor must it be thought that hatching cannot take place except under these conditions, for we have known most successful results obtained in most unlikely places, but then the unfavourable surroundings were compensated by extra care and skill used in management. Where these can be given then much that is adverse can be overcome, only it is better to do away with the necessity of

overcoming, and, of course, it is not every one who is so skilful as this would imply.

The artificial rearing of chickens was proved to be a success long before artificial hatching became practical, but the introduction of incubators has certainly made it more popular. There are, however, many people who hatch in incubators and rear under hens; and also those who hatch under hens and rear by artificial mothers; and, further, those who both hatch and rear by natural methods, but use mothers when a hen deserts her brood. All these plans may be adopted according to the pleasure or convenience of the breeder. We used an artificial mother long before we thought of having an incubator; in the first place, because we found it simpler to manage with the limited space at our disposal, there being no fear of fightings between hens; and we actually found that the chicks did better than when going about in the usual way. Those who rear under hens, even if they hatch in a machine, do so because they have plenty of space for their broods, and also under the impression that the hens are better able to look after the chicks, obtaining for them worms and other forms of natural food. We, however, never had any trouble in this way, but, of course, took great care to see that everything necessary was provided. At that time we kept a non-sitting breed only, and sitting hens had to be borrowed or purchased, so that it was our object to have as few of these as possible, and we used in this way to leave the hen at liberty to sit a second time—which, by the way, is no cruelty, and can easily be managed. Those who keep a breed of sitting fowls will find it advantageous to let the hens hatch and rear a batch of chickens each year, especially if valuable stock, or only kept for breeding purposes.

Artificial mothers are very largely made and sold now, and there is an abundance of choice. The "Westmeria," brooder (Fig. 15) is about as near perfection as we have seen, and has achieved remarkable success, both for chickens and pheasants. It consists of a small shed-like structure, with roof forming a lid. Rather less than one-third of the entire length is taken up with the nursery proper, which is heated by a lamp, the remaining portion being a covered run, suitable for wet weather. A couple of wheels at one end, with handles at the other, enable it to be moved about with the greatest facility, and there can be no question that one of the most important points

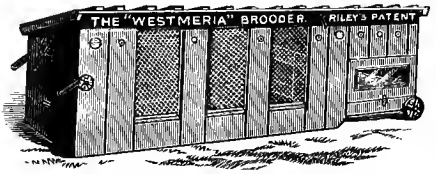

FIG. 15. WESTMERIA BROODER.

in successful chicken rearing, whether natural or artificial, is that the broods shall have fresh ground when placed out in the open air. There are excellent arrangements in this brooder for ventilation, warmth, and light, and we have had the highest testimonies as to its efficiency and simplicity in working. One very important feature is that the lamp the Company is now sending out is so protected that it can scarcely be blown out—a manifest advantage when used in the open air. Many breeders find it advantageous to have a second lamp always ready to take to the Brooder in the morning, so that each in turn may be properly trimmed and cleaned. The fresh air is warmed as it enters, and by this means

the chicks are not tempted to crowd each other by seeking a comfortable place.

Another useful appliance is Hearson's Hot-Flue Foster Mother, in which the sleeping compartment is heated by means of a flue running twice the length from end to end, through which the whole of heat products of combustion and heat of the lamp are caused to circulate, and eventually discharge into the open air. There is, of course, no chance of the fumes from the lamp coming into contact with the chicken, as the flue through which the products of combustion pass are air and water tight. The space above the flue is packed with non-conducting material, to prevent loss of heat from above. Thus the Foster Mother is not only a most complete appliance, but also is most economical, as the larger portion of heat is rendered effective. The hot pipes are placed a good height above the heads of the chickens, so that they cannot come in contact with them, and as the pipes are quite naked, the radiated heat falls directly on the backs of the chickens. By this arrangement the objections to the use of felt or flannel strips (which have a tendency to harbour vermin) are entirely avoided, and the chickens are not liable to hang themselves or become entangled, as they sometimes do with frayed ends of flannel, &c., in the old-fashioned apparatus. Owing also to the excessive head-room given in this Foster Mother, it is impossible for chickens to be crushed through overcrowding; in case one gets pushed into a corner, it can easily release itself by getting on the heads of the others to a cooler place. We have even found, from the genial way in which the heat falls on the chickens from above, that they are induced to stretch themselves out at full length and separate, instead of crowding together, as they do in apparatus where flannel and felt strips are provided

for nestling into. Thick double flannel curtains depend from the sides of the sleeping apartment, and divide it from the glass runs, which are situated on either side. The flannel curtains are slotted at intervals, and through the openings thus formed the chickens run in and out. From the glass run sliding doors open out into the wire run. The glass is secured without putty, and can all be taken out or replaced in a few minutes. The whole apparatus is put together with screw-eyes and washers.

Very similar to the "Westmeria" is the "Tunnard" rearer (Fig. 16), which, however, differs somewhat in

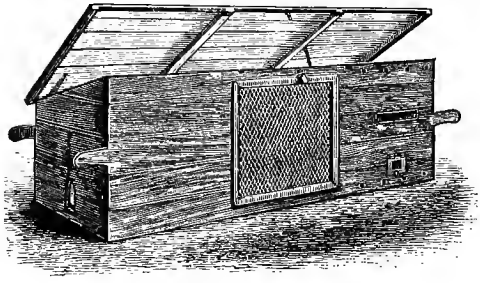

FIG. 16. "TUNNARD" REARER.

details, and is not fitted with wheels. It has excellent arrangements for heating and ventilation, and can be recommended with the greatest confidence.

A simpler form of rear is that known as the "Calway" (Fig. 17), suitable for twelve to fifteen chicks, and being circular, with heating apparatus in the centre, there is small danger of overcrowding. For heating an oil lamp is used, which is placed in the centre, resting upon the bottom. A metal cone or cylinder, closed at the upper end, and with a disc to intercept and radiate the heat, is placed over the lamp, a pipe in the upper end leading off the smoke or fumes. The cone stands on a false bottom,

which rests on strips placed across the bottom, leaving a space for the admission of air to the lamp. Two valves are so arranged that the supply of air can be cut off or increased, and so regulate the temperature of the rearer. The valves direct the currents of air in such a way that the lamp cannot be blown out by them when the rearers are placed out-of-doors. Calway's chicken rearer is most successful, and it is very simple and inexpensive.

The first essential for a mother is to see that it is placed on a perfectly dry place. Showers of rain do the chicks no harm, but running about on damp ground or

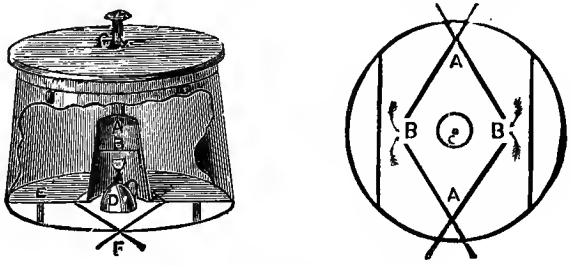

Fig. 17. Calway Rearer.

amongst wet grass is very dangerous. This can generally be avoided if a little care be taken, a lawn or well-drained meadow serving best for this purpose.

A second consideration is that the chicks shall not be overcrowded, for which reason we prefer in large yards having two or three mothers at work together, keeping all chicks for the first fortnight in one, removing them to another for two weeks, and again to a third for the same period, when in ordinary weather they can be transferred to the cold mother, *i.e.*, strips of flannel nailed to the underside of a shelf just so high that the backs of the chickens can reach it. More chickens are

lost from overcrowding than from any other cause, for the air is thus vitiated, and the chicks die very rapidly. Not more than twenty-five should be put in any one mother, and every day it should be lifted off its supports to let the air blow all vapour away. The floor should be kept covered with dry earth or ashes or peat moss litter, cleaned out every day, and the run also moved on to fresh grass as often as necessary. In fine weather the chicks may be allowed out in the open, and for this purpose covered runs are generally sold with the mother.

The last caution that we need give is to see that the mother is not too hot, or it will make the chickens tender. This is a mistake often made, and we must warn our readers very strongly against it. If the mother be 65 to 70 degrees that is hot enough in cold, and 10 degrees less in warm weather.

Perhaps a little trouble may be experienced in the first instance in teaching the chicks to feed, as there is no hen to do this; but if the food is placed on a board and it is tapped with a pencil or piece of wood, they will readily respond, and afterwards one of the older chicks will act as tutor to the younger ones. Of course it will be understood that the chicks hatched under hens should be placed in the brooder within twenty-four hours, or they will miss and fret after their natural mother.

CHAPTER V.

EGGS AND CHICKENS ALL THE YEAR ROUND.

Need for winter supplies—Winter-laying breeds—Housing and feeding—Succession of pullets—Early moulting—Young birds the best layers—Age to kill hens—Table supplies.

THE poultry keeper who can manage to secure eggs during the four months from November to February ought, all things else being favourable, to derive excellent results from his enterprise, for during that period the prices at which they must be bought are double, and in some places treble, what is paid at other seasons of the year. Scarcity in anything means enhanced prices, but more especially in that which is a regular article of food. Hence the reason why we are constantly met with the question, "How can we secure a supply of eggs in winter?" That eggs can be produced in the winter season is undoubted, for it is regularly done, and whatever is accomplishable by one poultry keeper ought to be within the possibilities of another. The object of this chapter is to indicate the way in which this desirable end can be achieved.

It must here be borne in mind that certain varieties are better winter layers than are others, and though much can be done by housing, by securing a supply of

pullets before the winter sets in, and by arranging so that the older hens will pass through the moult in good time, I am sure it is essential to depend upon these winter layers rather than others for a regular succession of eggs. These are found among the General Purpose Breeds, such as Langshans, Plymouth Rocks, Wyandottes, Brahmas, Orpingtons, and others partaking of the Asiatic type. In every case the shells are tinted, but it is also true that they are decidedly small as compared with the size of the hen laying them, but this is forgivable because of the season at which they appear. Each one of these varieties is to be classed among the sitting breeds, and one reason for their laying better in winter than do non-sitters is because their attention is taken up at other periods of the year by maternal duties, and consequently their supply of ova is not exhausted. But this is not the only explanation, for there are several varieties which are sitters, and yet they produce very few eggs in winter. I believe that the chief reason is to be found in the fact that they are better clothed with feathers, and consequently they have less loss of heat by elimination than is the case with more scantily covered fowls. It must be taken, therefore, as a certain fact that in order to obtain a supply of eggs in the winter season one or other of the breeds named or their crosses must be kept. Unless this is done the great probabilities are that there will be scarcely any eggs at all during the winter months. As to the varieties named there is not much to choose between Langshans, Plymouth Rocks, Wyandottes, and Orpingtons in respect to their productive powers, but we are inclined to give the preference to the first and third named. Still there will be found divergences in all these as to their suitability to certain places or localities, and it would never do to

recommend one above all the others as adapted for every place. Where there is plenty of space at command the better plan is to keep one of these breeds and also one of the non-sitting varieties, so as to secure a regular supply all the year round.

Much can be done to promote egg-laying by proper housing and good feeding, both of which are equally important. Eggs are largely formed of the surplus heat power retained in the body, and if the hens are kept in a cold house there must be great loss in the reserve store of each bird, and consequently the ability to produce eggs is lessened by so much. There are, of course, some varieties, as those already named, better able to withstand cold than are others, but the best clad fowl must lose more heat if it is housed under such conditions as I have named than if it were protected against cold when on the roost. During the day it can keep itself warm if properly fed, but at night there is no motion, and the blood does not circulate actively. There are various ways of protecting the inmates against cold. First, by seeing that the house is water and wind proof; second, by not having too few birds in a house; and third, by making the walls, as far as possible, non-conductors of heat and cold. The latter point can be arrived at by having substantial walls, by covering the outside with tar felting, or by coating them thickly with successive layers of tar, between two of which there may be placed sheets of brown paper, or by lining the inside with thick brown paper.

Food in winter must be abundant, as the appetite is then keener through greater demands on the system and more rapid loss of heat. It should be good, more starchy than in summer, and when the ground is hard and the fowls cannot obtain any natural food, such as worms,

the addition of a little cooked meat is most important. Whilst we think that at certain seasons of the year too much soft food may be given, and good grain is to be preferred, there can be no question that hot meals will do much to fill the egg basket during the colder months. Spratt's Meal is one of the best foods for winter use, as it is for rearing chickens, and we have found that firm's Meat Grissel also of great service as a substitute for worms.

It has been mentioned that a succession of pullets is requisite to obtain eggs in winter, and no matter what the breed this must be done. Pullets of the non-sitting varieties bred early will lay better than will hens of the breeds recommended above if hatched later. In order that they may commence laying before the winter sets in, all chicks of the heavier sorts should be hatched before the end of March, for they grow much more slowly than do the lighter framed birds. Unless they can be induced to commence laying before October, there will be small chance of getting eggs before the spring, unless the winter be an exceptionally mild one. We have no right to reckon on such a state of things as this, and it is always safer to prepare for the normal rather than for the exceptional. Pullets of the lighter varieties need not be hatched before April, except to secure a supply of autumn eggs when the older birds are in the moult.

Whilst it will always be found that pullets lay much better than hens, it is possible to have the eighteen-months'-old birds coming on, and as their eggs are larger, on that account they should be encouraged. This can only be by getting them through the moult in good time, and the earlier they are hatched the previous year the sooner will they obtain their new plumage. It is also an

excellent plan to allow sitters to bring out a lot of chicks, which can be reared for table purposes, in June, as this seems to hasten the moult, and if they are at all tardy in beginning they may have twice a week some boiled linseed mixed with their soft food, as this has a tendency to loosen the feathers.

The securing of a regular supply all the year round is a most important consideration, and every poultry keeper ought to strive after it. The importance of having a constant succession of pullets is shown very clearly by the report given in my work, "Poultry Keeping as an Industry for Farmers and Cottagers," of Mr. Annett, jun.'s, experiments in Northumberland. In 1890 that gentleman kept a faithful record of the laying of his stock, and if we compare the tables given as to the two lots of White Leghorns, it will at once be seen that during the months of October and November, when the two-year-old hens were in the moult and had practically ceased laying, the pullets made up for the deficiency.

Supposing, therefore, that the stock is to be maintained at sixty, this number should be divided into birds of two ages, and in the spring there should be thirty hens two years old, and thirty a year old. It must be borne in mind that in order to fill up the gap in the autumn at least thirty young pullets must be bred. Now the process is that so soon as May is out, the thirty two-year-old hens should be fattened up for market. They will fatten more easily than at a later period of life, and though no one could claim for them that their flesh will compare with that of a young chicken, yet it is by no means poor, and will realise a good price on the market if properly prepared. A most important consideration in recommending the adoption of this plan, is the better price which can be obtained for the hens than they will

ever afterwards command. This is, no doubt, secondary to that of the egg production, but it is yet to be considered. The killing off of the two-year-old hens in the early summer will, of course, reduce the number of eggs laid, for they must be slaughtered before the first signs of moult appear, but the loss is at a time of year when eggs are almost at their lowest price, so that it will be less felt than if the killing took place earlier or later.

If the pullets have been hatched sufficiently early, and I should recommend that chicks for this purpose be hatched from February to May, but never later than the latter month, the pullets will commence laying in August and September, and they will thus give a supply when buyers are less fastidious as to size than if eggs are more plentiful. Properly fed and treated there is no reason why the pullets should not continue laying all through the winter, and, given that the hens left pass through the moult in good time, I am certain that the result will in every way be more satisfactory than if the older lot of hens had been retained. Of course, if any hen is known to be a splendid layer it would be unwise to kill her off, but I have been arguing as to rule, not exception. Such a hen should be placed in the breeding pen, where her quality will be of great value in the improvement of the entire stock.

In order to have a supply of chickens throughout the year it is necessary, of course, to have a succession of hatchings, and as a rule it is not very difficult to accomplish, even with hens, that is, where artificial means are not in vogue. To accomplish this result it is an excellent plan to bring out a brood or two of chicks in December, following with others each month in accordance with the need, until May or June, and have a further lot

hatched in August or early in September, so there may be no period of the year when chickens are not available for the table.

The remarks made above with regard to the obtaining of eggs at different periods of the year will indicate how fertile eggs can be obtained, even in such a month as December. For this purpose, however, it may be stated that young pullets should be chiefly depended upon, and mated with active male birds. Of course the pens must be put together early, and those who hatch out of the regular season should be prepared to give a little more labour than is necessary at other periods of the year.

CHAPTER VI.

THE PROFITS OF POULTRY KEEPING.

Antagonistic ideas—Cost of feeding fowls—Luxury fatal to profit—Sale of stock birds and eggs—Exhibiting—Accounts—Methods of book-keeping.

Some years ago a lady friend who was very much interested in poultry keeping, and kept a stock of about twenty fowls for the supply of her own table, found that her efforts as a producer met with small support from her husband, who declared that every egg cost sixpence and every chicken three half-crowns. This is often the way with men-folk. We have known instances where farmers begrudged every grain of corn given to the chickens, and more than once found their wives had perforce to wait until the good man was out of the road, and then obtain a bag of corn or meal surreptitiously. And, further, even those whose pockets are saved by the hen money, will loudly proclaim that poultry are not profitable, ignoring the fact that but for the despised fowls they would often be called upon to supply the needs of wife and children for garments and those etceteras which make up life.

But returning to our first-named friend. One day the husband was disclaiming in his usual manner,

against the fowls, when it was suggested that the thing was possible of proof, and he should test it. So it was agreed. He undertook the book-keeping, so that there might be no "cooking the account." For an entire year this was done, every item of expenditure and receipt was recorded, number of eggs laid and chickens consumed faithfully entered, and the balance struck at the twelve months' end, when, to the gentleman's astonishment, it was found that the eggs had averaged one halfpeuny each, and the chickens less than eighteen pence. It is needless to say that he was a quieter and wiser man subsequently.

Of course, the household referred to supplied much of the food consumed by the fowls. But here we see how useful fowls are, consuming what would otherwise be wasted, and in many households there is much in the way of scraps which can be turned into eggs and flesh as indicated. Often a few fowls can be maintained with very little expenditure for corn and meal, and for those who keep fowls upon a limited scale there should be some relationship between amount of food available in this way and the number of fowls kept.

Sometimes a suggestion is made that fowls, using the word in its widest sense, can be maintained for a named sum per annum, and I have seen various sums given ranging from 4s. 4d. to 8s. By reference to an important table of statistics in my work on "Poultry Keeping as an Industry for Farmers and Cottagers," it will be seen that the consumption of food varies considerably amongst the different breeds of poultry. From the table mentioned it will be found that the annual consumption of food varies from a little more than 4 oz. to 17½ oz. per diem, that is, the entire amount eaten by the fowls, who could not obtain any naturally, and, there-

fore, had to be supplied with every particle. Taking the cost at 10d. per 14 lb., the former represented an annual cost of 5s. 5d. per fowl, and the latter of 23s. 9d., or rather more than four times as much. Therefore, in calculating the cost for food, it is important to bear in mind the breed, as well as the amount of waste food available and the natural food obtainable by the fowls. Moreover, wherever there are growing crops refuse grain is usually at hand, and its cost would be much less than the sum named. But it may be stated that economic breeds at liberty should cost from 5s. to 8s. per fowl per annum, and according to the amount of scraps available will this estimate be reduced. We know one large farmer who keeps about 2,000 fowls, principally White Leghorns, Plymouth Rocks, and crosses between these two breeds, who says the cost has been 6s. per head. He feeds well, believing that it pays to do so.

It would be very easy to quote many actual statements made by poultry keepers showing profits made, and in spite of much adverse criticism, too often by those who fail to see that these returns only apply to similar cases, there can be no question that they are in the main correct. When the stock is properly managed it is by no means difficult to realise 5s. per annum net profit, or even more if food is cheap, and the produce is credited at consumers' prices, or can be sold without the intervention of middlemen. But to secure this result needs care and attention. Breeds must be chosen with discretion, and in accordance with the requirements of their owners. A false step in this way will be fatal to, or seriously limit success. It would be folly raising first-class table poultry if there was no demand for these birds at remunerative prices, though I am firmly convinced that in few districts could not such a demand be

created if the produce were put forward in a right manner. Even if the only object is to supply a single household there need be no difficulty in making the enterprise a pecuniary success. With such advantages in the way of food already referred to, the cost, under proper management, should be small, while the advantage of having new-laid eggs and good plump chickens is not to be disregarded. Of course much depends upon the management. Extravagance in hen culture pays no better than in any other pursuit. Sometimes we have known people who would spend freely for their conservatory, greenhouse, or stable, growl that, in spite of their reckless expenditure, the eggs and chickens cost a little over market prices. Such want of fairness is by no means uncommon. We do not say that poultry keeping will pay for luxurious houses and plate-glass windows any more than can a dairy where Musgrave fittings and Minton tiles are employed. These are luxuries and not necessaries, and luxuriousness is destructive of favourable balances.

Profit is often determined by the kind of fowl kept, for where there are really good pure breeds, a demand for stock birds at reasonable prices frequently springs up. It is for this reason that poultry keepers, more especially if they are not restricted by space, should not keep mongrels. A cross-bred cockerel or pullet will seldom realise more than killing price, whereas for well-grown young birds 5s. to 10s. 6d. is easily obtained. Then again there is the demand for sittings of eggs in the spring. Three shillings to 7s. 6d. for thirteen eggs can be obtained if from good stock birds, even by those who have never exhibited their fowls, but keep first-rate poultry of popular varieties. Whilst for eggs from prize winners, 10s. 6d. to 42s. per sitting can be secured. The

writer once sold in four months £30 worth of eggs from a single pen, in which were some successful specimens. Given a moderate sale of either fowls or eggs and the returns will be enhanced.

Whether keeping fowls for exhibition is profitable or not depends upon many considerations. That a large number of exhibitors do find it pay cannot be questioned. An income of £500 per annum secured in this way has not been unknown, but, of course, that is exceptional. Many instances could be detailed where more modest, but still substantial profits have been made year after year by the breeding and exhibition of fowls. Still there is the fact. To do so needs skill, energy, and enterprise, and the means to purchase the best blood. We know a gentleman who sold upwards of £1,700 worth of fowls within six weeks, but he had given £100 for a cock bird as the basis of his success; and it proved a splendid investment. Another large poultry breeder lives in a good-sized country house, surrounded by considerable land, and he lives entirely out of the proceeds of his poultry yard.

To succeed as an exhibitor requires the qualities just spoken of, skill in mating and breeding, time to properly train the fowls, and all the trouble involved in sending to and visiting shows. In the next chapter will be found particulars as to this fascinating pursuit, which during recent years has grown to such enormous dimensions.

There can be no question that there is far too great laxity in the keeping of accounts. Wealthy persons, who do not care how much a thing costs them, may be permitted to dispense with all such records as we are commending, yet even they will find it advantageous to have them. But so far as those are concerned who look upon their poultry as a means of adding to their income,

and with whom they must be profitable if kept at all, or at any rate desire their poultry yard to pay its way, it is almost essential that they should set down every item of expenditure and receipt, not only for reference and as a means of seeing whether the fowls pay, but also for future guidance. Armed with a full and a faithful record of a year's work, an intelligent poultry keeper will be able to avoid mistakes, to see in what direction he may develop his business with the greatest probabilities of success, what breeds have proved the most profitable, what expenses can be cut down, and, it may be, often so turn a loss into a profit. Figures are stubborn things, but a study of them has saved many a man from ruin, and we believe that in every pursuit of life, whether it be our ordinary affairs or those outside things which minister to our pleasure or are matters of business, a strict account should be kept of every item of expenditure. We urge every one, therefore, whether the number of his birds be small or great, to keep an account of the same, and the system we are about to recommend will be found equally suitable to all denominations of poultry keepers. The cost of a book in which to keep the account need not be more than a shilling or two, and except where very large numbers are kept one book will be sufficient. A quarto book, bound in boards, ruled with £ s. d. columns, and containing about one hundred pages, can be obtained for one shilling, and the majority of our readers will find this as large as they require. Extra columns can be ruled as needed.

In commencing to enter up such a book, the first thing to do will be to take stock of all the houses, appliances, and fowls on hand at the beginning of the year, and the two former should be valued at something like their secondhand selling price, or if they are put down at full

cost, there should be a good percentage taken off for depreciation. Any appliances which are useless or have been discarded should not be reckoned at all, and the object should be to put down everything in a way that there can be no doubt of the correctness of the balance-sheet. Then the birds must be treated in the same way, and in this case we advise that no fancy price be put on any of them. If a couple of pounds has been spent for a first-class stock bird, the value is not really in the fowl itself, but in what he may do by improvement of his progeny; and we suggest that all the birds be put down at such a price as they will readily bring—pure bred ones at about 5s. each, and cross-bred ones at 2s. 6d. or 3s. each. When the stock has been taken the totals will represent the capital invested at the beginning of the year, and we shall, in the proper place, show how to enter this in the balance-sheet.

Having taken the stock and entered the same, the next step will be to devote as many pages as may be thought fit to the cash account, which will be the one needing most care of all. Every item of receipts and expenditure, no matter how small, if even it be only one penny, must be put down, and on the day when the transaction takes place. Without regularity the account cannot possibly be kept correctly. If thought fit columns may be ruled on the receipt side for "Eggs sold," "Fowls sold," "Various," in addition to one for the totals; and on the expenditure side for "Fowls purchased," "Food," "Rent and Wages," and "Various," and in large yards this would be found an advantage, but in smaller ones it will not be necessary, as the separate entries will be sufficient if checked against the cash account itself.

In those yards where breeding operations are carried

on, a fowl register will be found most useful, and where there are more breeds than one kept it will be well to rule separate columns for each, as by this means the stock on hand of each variety can be seen at a glance. On this side the account must be commenced with the number of birds on hand, and columns will be required for "Birds purchased," "Chickens hatched," and "Totals"; and on the creditor side for "Birds sold," "Birds lost or died," "Birds killed for household," and "Totals," which will give all the requirements of the most extensive yard. Following this will be the "Egg account," which will take up more room than any other, because a line will be needed for every day in the year. If possible, it is best to make each opening of the book serve for a month, and then the number laid can be easily tabulated. On the left-hand page there will only be required the column for numbers laid, except where more than one variety is kept, or the flocks separated, in which case it will be advisable to give separate columns for each, so that the fecundity of the various breeds can be compared. On the opposite page will be needed columns for "Eggs sold," "Used for hatching," "Consumed in household," and "Totals," thus accounting for every egg laid.

The sections we have already enumerated will form the main portion of the book, and with the exception of the concluding pages for stock-taking at the end of the year, and a few pages for memoranda, which latter should always be left, as they are useful for entering such things as cannot be provided for separately without making the book complicated, there will not be anything more needed except a "Hatching record," which is a very handy and useful thing for breeders. In this columns are provided as follows: "Date of setting,"

"Date due to hatch," "Breed," "Number of eggs set," "Number hatched," "Number reared." This will be found of great service during the breeding season, very handy for reference, and probably prevent many a mistake.

Of course all during the year the book will have to be carefully kept, and at the end of it the various accounts will have to be added up, and the stock taken again as at the beginning of the year.

The balance-sheet is made out by putting on the debtor side—(1) The value of house and stock on hand to commence with; (2) The amounts paid under their various heads, such as "Fowls purchased," "Food," "Rent and Wages," "Appliances," and, in fact, everything, the total of which should agree with the creditor side of the cash account. On the creditor side of the balance-sheet must be put—(1) The amounts realised for "Eggs sold," "Fowls sold," and various (which may include manure, feathers, &c.) items of receipt; and (2) the number of eggs and fowls used in the household calculated at a fair price. In addition to this the total value of fowls and houses on hand at the year's end must be entered on the same side, and then all added up. If the debtor side is greater than the other the difference represents the amount of loss, but if the creditor side be the greater then the difference represents the profits on that year's operations.

CHAPTER VII.

EXHIBITIONS AND EXHIBITING.

Universality of poultry shows—Number of exhibitors—Rise of the show system—Its growth at home and abroad—Effects—Preparing fowls for exhibition—Condition—Evils of forcing—Training pens—Feeding—Washing fowls.

POULTRY shows are to be found in almost every part of Great Britain, and those in other countries are to a large extent a copy. In the course of each year there are some hundreds of these exhibitions held, in several of which the exhibits are not to be counted by hundreds but by thousands. In the northern districts of England almost every village has a show of its own, and the day on which it takes place is made a great annual holiday. Some of these are in connection with a local agricultural or horticultural society, but the greater number are conducted independently, except that dogs and pigeons are usually associated with poultry in the show. The competition is as a rule very severe, and the exhibitors give as much thought to the production of their specimens as if the whole fate of an empire depended upon their success. We have known working men think of scarce anything for months than how they can win at the next show. They have denied themselves and their families so that they could purchase a good breeding

cock, and the infection has spread to their wives and children, who have willingly given up many little things they would have enjoyed, so that there might be produced a bird fit to win a first prize or a much-coveted cup. No one can have visited exhibitions in the North or Midland counties of England, or in the East of Scotland, without being impressed with the intensity of feeling and widespread interest taken in poultry shows. And be it noted that these people are not mere novices in the business. They know a good bird when they see one, and a judge had better get out of the way as soon as possible if he is not up to his work, for he will have to run a gauntlet of questions far more severe than ever a much-heckled Parliamentary candidate has had to undergo. I have sometimes stood at the entrance to poultry tents and watched the exhibitors pouring in, noting the eager expressions of hope and fear on their countenances, the flush of pleasure or the pallor of disappointment; and at other times have stood near the pens listening to criticisms passed upon the specimens and the awards, surprised at the knowledge of breeding displayed, and astonished at the practical opinions of both the exhibitors and their wives, who are just as eager as the men themselves. Be it beneficial or not, there is no question that "the fancy," as it is called, is a very widely spread factor in the lives of large numbers of our working population.

It is very difficult indeed to estimate the number of those who are interested in this pursuit, but some years ago I compiled "A Fanciers' Directory," in which there were then (1880) upwards of twelve thousand exhibitors, and we believe that since that time this number has been largely augmented, for shows have increased in influence and size. Then there is also the fact that for every one

who exhibits there must be at least half a dozen who do not, for in many places small breeders never think of sending their birds to shows unless they happen to breed one that is exceptionally high in merit. It is, therefore, impossible to give any reliable figures as to the actual number of those who may be termed fanciers. The best proof that this is a strong interest may be found in the large numbers of exhibitions scattered all over the country. At one of these—the Dairy Show held at Islington every October—the entries of poultry in 1893 numbered 2,150, or nearly 2,500 birds, and other exhibitions such as Birmingham, the Crystal Palace, Liverpool, and Edinburgh, are also very large, indicating that there is a very strong and widespread interest taken in the breeding of poultry. Large businesses have sprung up to supply the needs of exhibitions and their supporters; railway companies derive an enormous revenue through the transit to and from the shows, several newspapers are "run" in the interests of fanciers, and during the show season there is quite a little army of judges, reporters, and exhibitors always on the road, passing as rapidly as may be from one show to another.

The show system is of very recent growth, and has really taken the place of the old cock-pit. It may be dated from the cochin mania of forty years ago, though there had been what were really shows on a small scale long before that time. The late Mr. Richard Teebay, of Fulwood, Preston, once gave an interesting account of the competitions in pre-exhibition days. Both in Lancashire and Yorkshire the breeding of what we now call the Hamburgh was the chief recreation of weavers fifty years ago. In Lancashire it was the custom for exhibitors to take their birds under their arms and show them on a table in an inn room, each

exhibitor arguing for the good points of his specimen, whilst his rivals pointed out its bad points. The judge stood at one side of the table, and after lots had been drawn for rotation in showing, Nos. 1 and 2 were put upon the table, their merits decided upon, when the beaten bird was removed and No. 3 brought forward, this being repeated until all were disposed of. Of course, the last one was declared to be the winner. But with the advent of the cochin mania the number of exhibitors increased, and the desire of the public to see these wonderful new fowls that were to be mines of wealth to every fortunate possessor, was so great that shows were instituted. Though the system has been greatly modified, though the outside public do not patronise shows as they did formerly, yet it is to the interest then engendered, we owe the present poultry system. The majority of an older generation of fanciers, fathers of poultry breeding in this country, many of whom have, alas! passed away, first learnt to love fowls through buying a pair of cochins. Some, it is true, were lovers of the cock-pit, and when cock-fighting became illegal they followed the bent of their minds and took up the exhibition of fowls instead. There are yet many who can tell of their conflicts in mains, and who, it may be, look longingly back on the older form of competition, but those who were the means of commencing the present show system little thought it would ever grow to the present dimensions.

Much more might be said about these early shows, and the story of the cochin mania is a most interesting one, but it is not necessary that we should recount it more than to say that in the former there was very much less of the professional element than is to be found at the present time. The effect of this mania was to teach

skilful breeders and sharp dealers that there was a very good living to be made out of the business, and then was established a class which has not tended to the elevation of the pursuit. Nor has the fancy system been confined to Britain, for we find it has spread to America, to Denmark, to Germany, France, and to the Antipodes, where it is perhaps strongest of all outside Britain, most nearly resembling the mother country. This is due to the fact that several very prominent breeders have emigrated to New Zealand and Australia, where they have carried out their old ideas and tastes. Some shows in the Southern Hemisphere are strong both in numbers and quality, and breeders there have been most enterprising in securing first-class stock from the old country. In New Zealand especially, which is like this country in many respects, is there a large poultry interest growing up, and we expect that land will do for the southern portions of the globe what Britain has done for the northern, namely, be the great breeding ground for high-class stock. America also has done good service in that she has introduced several new breeds, and I believe that it is to the advantage of the pursuit that there should be fresh interest engendered which can only be by that which is novel. These breeds have a distinctive character of their own, and show that American breeders are determined to have something which is not merely a blind copy of what can be obtained elsewhere. In this respect we think they are to be commended.

Whether shows are beneficial or not need not be discussed at any length. They provide a most innocent recreation to large numbers of people, and for that reason alone deserve support. Even though we acknowledge that in a few instances excessive breeding for points has been injurious, this is far more than balanced by the

vast amount of benefit in improvement of other varieties. Without shows many of our most valuable breeds would have been unknown, others would have remained in obscurity or been lost entirely. But we hope that economic qualities will ever be kept prominently to the fore in the more useful varieties, leaving to the fancier pure and simple those breeds which never have and never can claim attention by reason of either their prolificacy or meat qualities. Of late this has been so, and we believe that no large fowl will ever maintain its popularity if these considerations are left out of sight.

Many poultry keepers who are not fanciers or exhibitors are glad to send a bird or two to a local show, and the information as to how they can give their fowls the best chance of success will probably be welcome. Shows have become more and more plentiful, and as the question of condition has great weight, it is very important indeed that birds be made to look their best. We do not mean by this that any unfair methods should be resorted to, so as to improve the fowls, and make them seem what they are not, for trimming or "faking" in any or every form we most strenuously denounce, but simply that the birds may show themselves in the best possible way. What is known by condition is the having of fowls or animals in the pink of health and bloom. Condition is, or ought to be, healthiness, for anything in perfect health has a beauty which can be supplied in no other way. This is one of the so-called secrets of exhibiting; and the exhibitor who can send his specimens in the best condition stands a much better chance of winning than those who neglect this matter. Many a worse bird has beaten a better one, just because it was well shown. Good appearance brings out the merits of the fowl,

whereas in the other case bad condition—rough plumage, dull appearance, and listless manner—so detracts from good points that the judge cannot place it as high as it would otherwise be. It is perfectly right that this should be so, and the exhibitor who sends an ill-conditioned specimen to a show deserves to be beaten for his neglect of so important a point.

It will be seen how desirable it is that birds should be exhibited in good condition, and the question naturally comes how to obtain it. If condition be healthiness, then to do this the fowls must be kept healthy. It is true that many exhibition birds are far from healthy, and that brilliant plumage is the result of breeding and of feeding. But birds so bred and fed do not last long. Feeding them up on rich food may apparently succeed for a time, but soon the natural result follows, and they lose that which gave them their prominence; sooner or later this forcing system of feeding is found to be a failure. The experience of all exhibitors teaches them that the most natural system pays best in the long run. For early chicken shows birds are often forced unnaturally, but very seldom is a winner at such shows of any use at the winter exhibitions. By that time the forcing has brought its natural result, and the fowl is unable to bear the strain. Those that are allowed to grow naturally, to mature slowly, to develop properly, stand the best, and ultimately are the best birds. Fowls intended to be killed early may be forced with advantage, but those designed as breeders or for exhibition ought not to be fed up in this way. Hence we find that many of the most successful exhibitors seldom exhibit their breeding stock, and as seldom breed from those kept for exhibition.

When birds to be exhibited are selected, the plan we

have always adopted has been to allow them as much liberty as possible up to within a week of the show. The object of this is to permit them to strengthen and mature. They are then each, or in pairs, put into a large pen or cage, something like the pens used at shows but larger—say, for large birds 4 feet by 2½ feet, and for small birds 2½ feet square. This cage is placed in a comfortable room or warm house, and on a bench about 3 feet from the ground. One object is to make the birds familiar with confinement in a pen, accustoming them to the passing of any one to and fro before the cage, and to the stirring-up process so common at shows. The owner should therefore train the birds in this way whilst they are in the pen, for many a first-class specimen has lost a prize on account of its wildness. When any stranger comes near an untrained fowl it rushes about, jumping up and down endeavouring to escape, and neither a judge or any one else can see what it is like. All this can be prevented in the way we have stated, and some fowls, Bantams especially, need nearly as much drilling as a regiment of raw recruits. They thus understand the whole business, know what is expected of them, and show themselves off to the best advantage. Ordinary fowls do not need as much training as is generally given to Bantams, but as much as can be done in a week will take from them the fear of being looked at and of being kept in a small pen. It is as well also to handle them once or twice a day. Judges often require to take a bird out of the pen in order to examine it. If it submits to the process willingly it has a better chance of success than if it violently struggles, as many birds do.

From what has already been said it will be seen that we do not believe in feeding birds for show upon artificial

or forcing diet. The reasons for this have already been stated. But it is quite allowable that slightly richer food should be given, so long as it is not overdone. Our plan has been to give a little Aromatic Compound in the soft food—Spratt's Poultry Meal is most valuable for feeding show birds—and twice or thrice during the week of preparation we mix a little linseed in the soft food. This is best prepared as follows: For a pint of water a fourth of a pint of whole linseed will be needed. Let the water boil, and whilst on the fire throw in the seed. The sudden application of heat causes the seed to burst, and if the water is allowed to gently boil for ten or fifteen minutes, the water will be found to have absorbed all the linseed, and the whole be a jellified liquid. This whilst hot should be mixed with the meal, and will contain sufficient moisture to take up enough meal to feed nearly half a score birds, for which number the quantity of linseed named will be sufficient.

It is also a good plan every day to take each fowl out of its pen, and, standing it on a box or hamper, smooth down the feathers the right way with the hand. This is very effective in obtaining an evenness of feather, and preventing roughness of plumage. And before they are sent off to the show the face, comb, wattles, legs, and feet should be well washed. That is if the bird has not been entirely washed, a process absolutely necessary to light-plumaged birds, and often beneficial to others also.

To those who have not tried it the process of washing a fowl may appear a very simple matter; and so it is, when you know the way. But as a rule very few persons succeed in washing a fowl properly for the first time or two, and experience is the best teacher, though a description as to how to proceed will indicate the right method. The articles needed are a tub or tin bath (a

sitz bath does admirably), some white curd soap, a sponge, a nail brush, some dry towels, a drying hamper or cage, and a good supply of water heated up to 105 degrees. The tub or tin must be of a good size, and we like it better if oval in shape, as this lessens the risk of breaking the tail accidentally. It should be sufficiently deep, so that when the bird is forced down into a sitting posture it will be covered with water, except the head. There should be, in addition to what we have enumerated, a pail of milk-warm water, and yet another with cold water, both of which will be required for the final operation in the washing itself. The cold water is sometimes useful in another way. Some birds faint through fear or excitement, and they can best be revived by throwing cold water on the head. Should any one faint there is no need to be alarmed; occasionally a bird does die, but very seldom indeed, and although we have washed hundreds we never had one succumb in our hands.

Washing any live thing is troublesome, and it is always better to have two operators, except perhaps in the case of very small birds. This is especially necessary when a bird is tubbed for the first time. The assistant should take the bird, holding it firmly by the wings and legs—a wing and leg in each hand—and place it in the water with its tail to the washer, who will then sponge it thoroughly until it is soaking wet all over. Next a lather is made by means of the brush and soap, in which the fowl should be almost enveloped. The lather thus formed should be thoroughly rubbed into the feathers, using more soap if needs be; and in order to get at every part of the body it will be necessary for the assistant to turn the bird round several times, and even upside down, for the washing will be useless if any part is neglected. The brush can be applied to the wings and feet, just

taking care not to break any of the feathers. The great secret in washing is not to be afraid of the bird, but at the same time to avoid injuring it. Roughness must not be used, but it must be well and thoroughly rubbed, either with hand, sponge, or brush, for unless all the dirt is taken out of the feathers they will never look nice, but will dry roughly.

When it is thought that the bird is thoroughly washed, the next step is to get all the soap out of the feathers. For this purpose the warm and cold water are needed. The assistant must lift the bird up out of the tub and hold it above, or, if other birds are to be washed, above another vessel or sink, and the warm water be poured over it, followed by the cold. This is one of the most important parts of the whole process, and the object is to wash the soap well out of the feathers. If enough water is used, and the bird turned over once or twice, it will be done. Next, all the water possible should be squeezed out by the hands, after which the bird, being placed upon a table or some other firm place, should be dried as much as possible with the towels. Rubbing the feathers well is an important matter, and though they be well ruffled in the process, they will be all the better for it, coming right again when dried, often to the surprise of the novice.

This much done the fowl is ready for the final drying before the fire. The simplest method of drying is to have an unlined exhibition hamper, covered all over with cloth, except the front. On the bottom clean straw should be laid, and a block or perch for the fowl to stand on put therein. This hamper should be raised up so that the bottom will be level with the lower bar of the fire-grate, and then the heat will get well below, rising all round. In drying, the fire must not be too hot or the cage

placed too near, but it should be sufficiently close to allow the heat to get well in. A couple of hours should make the bird perfectly dry, and twelve hours after that it can be sent off to a show with safety. It is best before doing so to rub the feathers down the right way with a soft linen cloth or silk handkerchief, thus to smooth them as much as possible. A very little oil on a sponge may be used to brighten the comb, wattles, face, and legs, but it must be very little, or more harm than good will result.

CHAPTER VIII.

FEEDING.

Importance of sound food—What food is and does—Food values—Soft food—Times of feeding—Grit—Dangers of over- and too rich feeding—Feeding chickens—Regularity necessary—Water.

In the past very little attention has been paid to the question of food by poultry keepers, and when we consider that it has more to do than anything else with the success or non-success of the pursuit, this negligence is somewhat surprising. In many cases there is no consideration whatever as to what is the best food in order to obtain certain results, but that which is cheapest, handiest, and of no use for anything else is often given, regardless of its suitability or quality. I need hardly say that good, sound food is always the best, and if food has to be purchased it will be found cheapest in the long run, for nutriment must decide the question of value, not bulk. Unsound grain is dear at any price, and, though much is sold and bought because of its cheapness, it is buying a small quantity of good enclosed in a mass of bad food, which is often positively injurious. Sea-damaged grain can be purchased in towns near the coast, but should not be used in any way, whilst heated or soft corn spoiled by fresh water is not so objectionable,

as long as it is sweet and properly dried. On farms there is usually small corn which is not easy to sell, and this should be used, as well as anything else of a similar nature, as it is often the more suitable for poultry feeding, and prevents waste; but it would not be fair to charge this to the poultry food account at more than a nominal price.

Different grains have varying qualities, and whilst one may be just the right kind if eggs are wanted, it is useless for fattening purposes, and *vice versâ*. Therefore it is at once apparent how important it is to give the right kind of food, and I shall endeavour to clearly define the characteristics of the various grains in common use, and readers will then be able to decide for themselves which are most suited to their purpose. But the question of cost must also be taken into account, as in some districts one grain is plentiful whilst another is scarce, and what is said upon this subject must necessarily be guided by local circumstances. The more attention given to the question of food the better, and neglect on this score is fatal to success. There are thousands of poultry keepers who complain that their fowls do not pay, the whole secret being that they feed on a wrong system—*i.e.*, on wrong foods, or without regularity, by which I mean that the fowls have enough and to spare at one time, and at another not half plenty. Horse, cattle, and stock-breeders generally pay the greatest attention to the question of feeding. Great skill and scientific knowledge are brought to bear upon it, and any one who neglected this part of the business would be looked upon as little better than a lunatic; and yet these individuals will refuse to give any thought to poultry in the same way, but treat them in the happy-go-lucky style which so seldom finds any luck at all. We must not expect

the same measure of attention to be given to poultry, which can never be more than a minor product, but we can surely ask for attention proportionate to the interest involved; and that there is plenty of reward for skill and enterprise none need gainsay, when so many millions are sent out of the country which could easily be kept at home.

Food is the fuel to keep in operation the life of an animal, and without its aid in repairing the daily waste of the system a stoppage must take place and death ensue. It will at once be apparent to any one who gives the question a moment's thought that food must have more direct influence upon the condition and productive powers of the fowl than anything else, because the fowl can only be looked upon as a machine, giving forth in another form that which it receives. A portion of the food goes to make up for the natural waste, sustaining the bodily strength, and without it there would be a gradual expenditure of the powers and collapse. Any addition of the quantity of food, which is just sufficient to sustain life, is used either in the production of eggs or flesh. Whether the food shall be used in one or other of these ways will depend, first, upon the tendencies of the fowl, and then upon the nature of the food, and it is, therefore, not only important to have the right kind of fowls, but at the same time to give the right kind of food. There is one restriction, however, and that is, too much food must not be given, or, if the object be the production of eggs, it will be defeated, and perhaps, if prolonged, disease be caused. Even the fattening of fowls for the table must only be for a limited period, or a reaction takes place and disease sets in. Apoplexy, liver disease, and many other complaints are originated entirely by improper or overfeeding. The best guide for laying hens

is to give just as much as they will eat readily, and then remove all that is left; but to birds that are intended for the table more can be given, especially if they are to be killed early, but it is necessary not to feed them too long in this way, as they will begin to sicken.

Leaving out of the question the food which can be secured on a farm, and of little use for any other purpose, I will take the various grains in common use. Analysis proves that oats are about the best balanced food for general purposes; that buckwheat and barley come next; and wheat, beans, and peas bring up the rear. And on the other hand Indian corn and rice have an excess of fattening qualities. Therefore the first named are most suitable for layers, whereas the last are valuable for fattening. Milk is also useful for the latter purpose, as it is greater in fat or oil, in proportion to its solids, than any grain. I would select as the best food for laying fowls, oats, buckwheat, barley, and wheat in the order named, if given separately, but it is much better to mix them in equal proportions, with a few peas added also. Upon no account, except in cold or wet weather, should Indian corn be used, and then only in small quantities. It is a useful grain for some purposes —in fact, one of the best known—but feeding heavily on it will soon stop the supply of eggs. There is an advantage in having the grain mixed, as a variety is thus presented to the fowls, and they do not tire so readily as if only one kind is provided. The mixture I have recommended contains all that is necessary, but dari, which is a small white Egyptian grain, can be added. It is better also to mix with it any wheat tailings that may be on hand, as a better grain to make up for its deficiencies.

In a state of nature fowls live entirely upon grain,

green food, and worms, but when domesticated a different plan is found to be requisite. Soft food is a great help to the promotion of laying or putting on of flesh, and it should always be given as a first feed in the morning, as soon as possible after daylight. Any of the grains already mentioned will answer if ground up, but it is essential to have the meal fresh, sweet, and good. Ground oats (not oatmeal, but the oats ground up, husk and all) is the best thing I know. This is a very common food in Surrey and Sussex, but it is sometimes difficult to obtain in other places. Millers will grind a sack or two, if ordered, but the oats must be plump and dry, and the stones newly dressed. If this is given as soft food, I would then omit oats from the corn mixture. Barley meal, coarse wheat meal, and buckwheat meal are all desirable foods, and a good mixture can be made of one part ground oats, one part barley meal, and three parts middlings or thirds or boxings or pollard or parings, this last-named article going under several different names. After mixing well together take out as much as is wanted for one feed and put into a pail or tub with any boiled potatoes, meat scraps, &c., that may be available, and in wet weather a small quantity of Aromatic Compound. Then hollow out the centre, and pour a little boiling water—actually boiling, we mean—into it. Stir up with a strong wooden spoon or stick, and keep adding the water and stirring until it is moistened all through. It must not be sloppy, but crumbly moist, so that it will adhere together if made into balls. Give to the birds as hot as possible, and in dishes or troughs (Fig. 18), except the feeding place is dry, when it may be thrown down one ball at a time, ceasing immediately the birds appear to have lost their eagerness. In addition to the

ordinary meals there are several prepared foods which are largely sold, amongst which we would specially name Spratts Poultry Meal, a most valuable, because cooked, food. These will be found first-rate for special purposes, or mixing with the ordinary meal, and can be purchased from agents in every town.

The number of times to feed fowls during the day is important, and depends largely upon the place where the birds are kept, as they get much more to eat by foraging on on unlimited run than in a confinement, and of course do not need so much to be given them. More

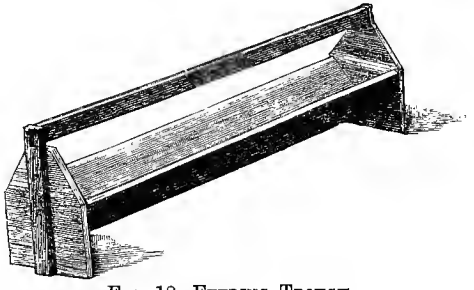

FIG. 18. FEEDING TROUGH.
(*Capt. Tunnard, Rugby.*)

people overfeed than underfeed, and this may be done by keeping food constantly near the fowls or feeding them too often. On large runs twice a day is quite sufficient, the first feed to be soft food and the last hard corn, to be given an hour before they go to roost; but where the run is confined, and there is no heap in which the birds can find plenty of slugs and worms, a handful of grain may be given in the middle of the day. Green food must be provided if there is not plenty of grass, as without this in one form or another the birds will not thrive. The object of all feeding is to keep the birds

strong and healthy, and careful attention in this direction will be well repaid. It is more easily secured when fowls are at liberty. Hence the greater care necessary when they have to be kept in confinement, and the importance of feeding carefully and sparingly.

Special prominence must be given to the need for grit, by which is meant fine, sharp stones. Unless these are obtainable fowls cannot properly masticate their food, and many diseases are engendered in consequence. Not only so, but the food does not fulfil its purpose, and the elements required by the birds lost. In most soils there is a fair amount, which can be obtained, when they are at liberty, without trouble to the owner. But if in confinement this necessary help to digestion must be artificially supplied, both for chickens and adults. For the former, stones about the size of buckwheat are required, grading up to the dimensions of split peas, according to the age of the birds. It is surprising how much will be consumed, and a heap or boxful should always be at hand. Flint grit is best, but any kind of sharp stones, road scrapings, or broken shells serve the purpose excellently.

The point wherein the majority of chicken raisers fail is with respect to this question of feeding. One of the most difficult matters to instil into the minds of poultry keepers is that the feeding of their stock must be very carefully and systematically done. Overfeeding is the cause of nearly all the diseases to which poultry, old and young, are subject. Thus it will at once be apparent that, if it is important to feed adult fowls in the right manner, it is especially so in the case of young chickens. The former may, under certain conditions, throw off the evil effects of bad feeding, but this is scarcely possible in the case of young and growing stock at a time when the

frame is being formed. The very desire to feed the birds sufficiently leads to the giving of either too much or too rich food. The delicate stomachs of chickens need food that shall be of a suitable nature and full of nourishment. This very fact leads to error. Rich food is not necessarily nourishing, or *vice versâ*.

Chickens do not require any food for the first twenty-four hours after they are hatched. The contents of the yolk-bag—which bag is absorbed into the stomach immediately before hatching takes place—contains sufficient nourishment for the first day, and any attempt to compel the chick to swallow other food is more likely to do harm than good by derangement of the digestive system. There will be no difficulty in inducing the chicks to eat if they are simply left alone for the first twenty-four hours after they have made their *début* into the world. All such practices as the giving of a peppercorn to newly-hatched chicks are most objectionable, and are founded either on superstition or ignorance. Such pungent things must be very trying indeed to a delicate organ like the stomach of a young chick. The still more objectionable practice of tearing off the horn or scale which nature has placed on the beak of chicks to enable them to break open their prison house combines cruelty with other things, for this scale will drop off itself in a few days. The less chickens are interfered with the better during the early stages of their growth.

The first food should consist of hard-boiled eggs, chopped fine, and mixed with twice their bulk of bread crumbs. Those eggs which have been sat on for a week and proved to be infertile answer capitally for feeding chickens. Failing these, we should purchase duck eggs in preference to using fresh eggs from hens, unless the latter are exceptionally plentiful. Only as much of the

egg and bread crumb should be prepared as will serve two or three times, as it soon loses its freshness, and will cause scouring if sour. It should be slightly moistened with milk, but very slightly, just sufficient to damp it. Much depends upon the manner in which the bread crumbs are prepared. The way we have always adopted has been to rub the bread—stale bread is to be preferred—through a fine sieve turned upside down. In this way they are not only speedily made, but are fine and even, which is almost impossible to secure if only rubbed in the hands. On cold or wet mornings it will do good to add a little seasoning, such as the Aromatic Compound advertised, to the mixture, and the same thing is desirable with the soft food afterwards. And bone meal should be mixed with the food of young chickens. The egg and bread crumbs should be continued for about a week, when the alternate feeds may be of some such food as Spratt's Poultry Meal, which, without hesitation, we have found to be the best thing for rearing chicks that has come under our notice, and it is nearly twenty years since we first began its use, that is, as a soft food. It seems to be a combination of just what chickens require, and yet it is not unduly stimulative. It can be fed for the whole period of a chicken's life without the least fear of injury or evil effects. When the chicks are eight or nine days old they may have the egg and bread crumbs discontinued, in place of which may be fed a little boiled rice, but not much of that, and some oatmeal mixed with barley or wheat meal, or, if it can be obtained, in place of the oatmeal, some ground oats. When the birds are about a fortnight old a little crushed buckwheat may be put down to them, as they will not be able to digest whole corn until they are older. From the time already stated they may be gradually accus-

tomed to a plainer diet, until four months old in the case of the rapidly growing breeds, and five months in the others, when they will require no different treatment from the adult fowls.

An important matter to be considered is the times of feeding, for the most inexperienced will see that young animals and birds need smaller quantities, but at shorter intervals than adults. The following may be regarded as a very good table for the periods at which chickens should be fed: For the first week or ten days, every two hours; after that five times a day; and when two months old four times a day. It is most desirable that the times of feeding be as equally divided as possible, and be strictly observed. Doctors say that there is nothing worse for children than irregular meal-times, and this is just as injurious in the case of chickens. The first feed should be early in the morning, say an hour after daybreak. This may necessitate early rising on the part of some one, but that grace is a most essential one for the chicken raiser. It can scarcely be expected that chickens which have to run about hungry for hours after they are astir will thrive properly. Some breeders leave a little hemp-seed overnight so that the birds can help themselves in the morning. This is undoubtedly better than nothing, but they will be more likely to do well if they have a warm feed first thing. Further, until the chickens are a month old they should have a feed about nine or ten o'clock at night. This entails trouble, but it is trouble that will be well repaid. Food should be given sparingly and never left for long. The system of feeding we have found best of all is to only give as much as they will eat readily. Lately there have been those who have written in favour of always having food so that the birds, old and young,

can help themselves; but we do not believe that it is the better method. A hungry chick is a thriving one.

Much contention has been raised as to whether chickens should have water or not. As to whether they can be raised without liquid needs no discussion. This has been proved possible. But what is possible is not always advisable, and we think that it is most desirable that the chickens should have access to water. They will only drink as much of it as their system requires. At one time we used a flat shallow dish with rings so that the chicks could not drown, which they are most likely to do in an ordinary dish. But a fountain that has recently been introduced by Spratt's Patent is much better. The cup is inside instead of outside, as is usually the case with fountains, and yet the chickens cannot get bodily into it. One most important thing in the feeding of chickens is a supply of green food. If they are being reared on a nice piece of juicy grass they can do without anything else, but even then a supply of fresh lettuces will be to their advantage. Should there not be good grass the lettuces become indispensable.

It is necessary to remind the reader that the directions given here for the feeding of chickens refer to those that are intended to be kept as layers or as stock birds. If to be fattened as speedily as possible and killed off, then another method should be adopted. Under these circumstances the food should be such as will develop flesh and not bone. For this purpose boiled rice and Indian corn form the staple foods. Full particulars as to the best methods of fattening will be found in the author's work, "Poultry Keeping as an Industry for Farmers and Cottagers." *

* Published by Edward Arnold.

CHAPTER IX.

DISEASES.

Disease now better understood than formerly—Influence of domestication—Confinement—Effects of bad conditions, unsuitable food, and unhealthy stock—Diseases resultant therefrom—Chicken complaints.

One result of domestication has undoubtedly been a great development of disease, but the attention given to this question in recent years has enabled us to more easily classify the various complaints to which poultry are subject, as also to determine the best preventive measures. Probably in former days fowls suffered from an equal number of diseases, but they were less understood, and the old rough-and-ready treatment grouped them into two or three classes. If a fowl were ill it was dosed with some simple remedy when treated at all, and the majority affected died, as did human beings from fatalities which could have been easily prevented or cured if understood. Older poultry books show this to be true, and as evidence of these statements we may say that in one of the earlier editions of Moubray, the only diseases named were Pip, Catarrh, Flux, Constipation, Chip, Roup, Gapes, and Cropbound.

At the same time it must be borne in mind that when fowls had greater liberty they suffered less from disease

than is now the case. Living under more natural conditions, with plenty of fresh air, free scope, sufficient exercise, and natural food, kept all their organs in active operation, whilst the inexorable law of "survival of the fittest" preserved only those best able to live. Weakly specimens were soon swept off. If delicate they "went down," as the expression is in some rural districts yet. Epidemics were by no means unknown, but they had the effect of preserving only the hardiest. If a fowl lived then it deserved to do so, though had the conditions of life been better understood this "slaughter of the innocents" might have been largely avoided.

With the advent of increased population, of an enormous growth of urban and suburban districts, and the great development of poultry keeping amongst all classes of the community, a vast change has taken place; and it has needed considerable time and somewhat painful experiences before we could appreciate all that these changes involve. But once realise the true meaning, and it is not difficult to meet the requirements of new phases and habits of life. One of the lessons which we learn more and more with regard to animals and plants, is their adaptability, within certain limits, to certain conditions. But to understand what the limits are is all important. Many varieties have been brought into conformation with the new state of things, and if they were subjected to the same rigours as were found formerly it would be fatal to many of them. This may be regarded as enfeeblement, but it is not really so, though, of course, they have not the same vigour as fowls in a wild or semi-wild state possess. They require treatment suited to their changed nature.

There has been a great amount of nonsense talked about keeping fowls in a natural state, and some writers

have advocated this without rhyme or reason. Many of our truest lessons in management are obtained from nature, but even this has its limits, and we must never forget that when any animal has been domesticated a vast change takes place, for which we must be prepared. Food, habitat, exposure, require to be considered in relationship to the new state of affairs. It need only be pointed out that fowls in a state of nature are never so productive as are our economic races under domestication. Egg production has been increased by some hundreds per cent., and it would be impossible to find wild fowls carrying the same amount of flesh with an equal size of frame as our best table varieties. As a case in point we need only refer to the difference between wild and domesticated ducks, which in the course of a very few generations increase enormously in size when bred under the direction of man. The reason for this development is at once apparent. Birds in a wild state expend so much of their heat force necessary for the attainment of their food by exercise, and are subjected to such extremes of temperature, that they have not the same surplus as when under domestication. In the latter state with a lessened demand for maintenance the surplus food goes to produce eggs and flesh.

The chief dangers to be feared when fowls are kept in confinement, are: first, from bad conditions; second, unsuitable and injurious food and overfeeding; and, third, breeding from enfeebled or diseased stock. To these three points we shall devote our attention, believing that it is more important to prevent disease than to cure it. A few simple remedies will be named, and those who desire to adopt treatment of sick fowls can find fuller particulars in my other works. But unless fowls are valuable it is better to kill off such as are affected with

diseases not easily understood, for in this way contagion is generally prevented. When sickness appears it should be a sign that something is wrong, and the cause should be rigidly sought for, so that its removal may be secured. It is very useful, however, to have a place where sick birds can be isolated, in order to see if there is any development of their affection, for by so doing spreading of the disease may often be prevented. Many slight affections can be thus cured, and developments of a more serious nature checked. As a slight cold in the human subject is frequently cured by remaining indoors for a day or two, so we have found such an arrangement recommended of great service. When fowls die unexpectedly, or are affected by a disease which is not understood, and they are sufficiently valuable to warrant the trouble, some specialist should be consulted, and the arrangements for free *post mortem* examinations in connection with such journals as the *Fanciers' Gazette* are most valuable in determining disease.

Taking the dangers to be avoided by poultry keepers already noted, the first, namely, bad conditions, resolves itself into several forms of which we must place unsuitable houses in the first rank. In the chapter upon "Houses and Housing" we have endeavoured to lay down rules for the guidance of poultry keepers, and we suggest careful study of that section. The results of overcrowding, vitiated atmosphere, and want of cleanliness are seen in several directions, diseases of the respiratory and digestive organs, comb, limbs, and skin being induced thereby. Fowls overcrowded are not only injuriously affected in their digestion, but more liable to cold, and its complicated development, roup. Roosting in an overheated atmosphere, the reaction when coming into colder air brings about bronchial and other affec-

tions, which assume almost as many forms as in the human subject. The first sign is usually a discharge at the nostrils, or watering of the eyes, which are, fortunately, easily discernible. Vitiated atmosphere may affect in a similar manner, but it usually influences the blood and digestion, and by reduction of vitiality, or enæmic condition, prepares the system for other diseases. It is, in fact, a form of slow poisoning. Eruptions and skin parasites are usually the result of this condition. Therefore, our remarks upon ventilation should be carefully observed. Want of cleanliness is very wide-reaching in its influence. Parasites of every kind are encouraged thereby, and no fowl can thrive that is pestered with insects or vermin, bacteria of many kinds find a favourable ground for propagation, and when inhaled affect many organs, foul odours poison the blood, and it is impossible to say where the end will be. Disinfectants are most valuable as accessories, but they will never make a place clean, and I should stake more upon absolute cleanliness than anything else for keeping fowls in a healthy condition. Such affections as white comb and scaly leg are the direct result of insanitary conditions.

There are some very serious forms of disease resultant from bad conditions, and two, at least, usually assume an epidemic form. These are chicken cholera and diphtheria. When these are met with they require to be treated heroically, and slaughter is the wisest course. The former can be known by a slimy discharge and high fever with rapid dissolution, and the latter by the membrane which forms across the throat. Both are highly contagious, even to the human subject, and brook no delay. At once all fowls should be removed to fresh ground, those affected should be killed, and houses, ap-

pliances, and ground be treated with lime to destroy all germs of disease.

Many poultry keepers, and especially those who, by the necessity of their position, must keep their fowls upon a limited space, fail to understand the dangers from foul ground. It is a law of nature that balance must be preserved in everything. The manure of animals and birds is most valuable for enriching soil, but upon the manure they cannot live. It is fatal to them, but is the vital food of plants. Hence the importance of growing out again the elements given to soil from the presence of animal life. This fact is the basis of all our modern agriculture and horticulture, as it is of all creation. But how few poultry keepers understand the necessity. If fowls are kept upon the same soil for years, in process of time it becomes charged with ammonia, and hence we have diseases, principally of the liver. Recently I came across some excellent poultry allotments provided very generously by a well-known and public-spirited lady, but no provision was made to permit of change of ground, and in two or three years, unless something is done to remedy the deficiency, disease must result. Fowls should annually be removed on to fresh ground, and a crop taken off that vacated before it is again used, or, if in small runs, the ground be absolutely renewed. Palliative or curative measures are of no use in this case—the cause must be dealt with.

Natural exposure is of itself highly beneficial, but must be regulated by the state of the fowls themselves. What would be desirable for one breed would be injurious to another, and domesticated fowls cannot withstand climatic effects as much as can those in a wild state. Young chickens bred out of the ordinary season require to be protected, and the shelter which fowls would when

at liberty secure for themselves, should be provided when they are wholly or partially in confinement. Furze or straw intertwined through fences, haystacks, trees, hedges, and bushes are all valuable in this direction.

A form of exposure which needs to be regarded is when birds are sent to shows. This is a most prolific cause of disease, and many colds are caused thereby. Travelling in hampers, which often become wet and are left on draughty station platforms, exhibiting in open pens, or close, heated buildings, offer opportunities for the development of disease, or induce fresh forms, and hence birds returning from exhibition should be fed on warm food, and be placed by themselves for a day or two ere they are allowed to mix with other fowls. A little foresight in this way will often prevent serious trouble.

It may here be explained that roup is a combination of cold and scrofula, and both affections need to be treated. But it is most important to take it as a sign that the blood is impure, and steps in accordance therewith should be taken. Several forms of roup medicine are sold, and we have found Chamberlain and Smith's Roup Pills of great service.

The second danger to be avoided is unsuitable or injurious food, and overfeeding. In this connection we ask consideration of the chapter on "Feeding." The organs affected are the crop, stomach, and liver. Crop troubles arise chiefly from want of grit and irregular feeding. When soft crop is found, by which is meant the gathering of fluid in that organ, it hanging down in front of the body, the food should be small in quantity, and light in nature, such as soaked bread or Spratt's Meal, and doses of powdered charcoal or Brown and Son's Aromatic Tonic Paste should be given, taking care to feed sparingly for some time. It is also desirable to

empty the crop by turning the bird upside down, and allowing the liquid to run from the mouth, and the withholding of food for twelve hours is desirable. Crop-bound is more serious, for unless the mass of food in the organ can be softened by pouring therein salad oil and gently kneading it with the hands, and so induce it to pass into the stomach, the crop must be cut open, the contents removed, and the incision stitched up — an operation which is not at all difficult.

Stomach troubles are very varied. Eruptions of various kinds, indigestion and its many forms, diarrhœa, scrofula, and worms are symptomatic of digestive derangement. For these ordinary remedies as given in the household may be employed, but the first step should be in causing the bowels to act freely, for thus further development will often be prevented. A gentle aperient cannot fail to do good, previous to treatment of the complaint itself, and food should be of the plainest kind, simply sufficient to maintain life. We have found ordinary Rhubarb Pills of great service, but for severe forms of indigestion and diarrhœa chlorodyne is especially valuable. For scrofula, which is really an affection of the blood, and the progenitor of many diseases, wood charcoal, iron, phosphorus, or iodide of potassium are all valuable. But it needs patience to effect a cure. For worms turpentine capsules are most efficacious, followed by a dose of castor oil. These internal parasites are more prevalent than is generally supposed.

Liver disease has been greatly developed of late years, and is due to overfeeding and the use of too rich or stimulating food. Indian corn has been a great cause of this insidious complaint. The worst feature in connection with it is that it may be existent for a long time

without its presence being at all suspected. Very often the first sign is only noticed a few days before the bird succumbs, when it is seen to be rather dull and listless. This may not appear to increase, but within two or three days it is found dead in the house. The most certain sign is when the bird mopes about, and instead of having a bright red coral comb and face, which is the best indication of health, it is purple or yellow. As soon as these indications are noticed, the food should be reduced in quantity and quality, avoiding everything of a rich or fatty nature. The best things to feed on will be whole barley or wheat in small quantities. It will also be as well to give some aperient medicine, preceded by a couple of grains of calomel every other day. The object is to reduce the system at once, or the disease will speedily be aggravated. Should any of the birds die it will be better to examine them and see if liver disease is present, which can easily be discovered, as that organ will be soft and very easily broken, or have cheesy lumps upon it.

The third danger is breeding from enfeebled or diseased stock, and upon this point we need not dwell at any length, for its ill effects will be apparent to every reader. The tendency in breeding is to aggravate every weakness or disease, and thus a mere temporary affection may, if the subject be used for stock purposes, be intensified and perpetuated. In-and-in-breeding is sometimes advisable for exhibition stock, and if properly carried out is of service in fixing type, but only perfectly healthy birds should be employed. Any weakness is enhanced by this system.

There are some special troubles inherent to chickenhood, and a few words as to these will fitly conclude this chapter. But be it noted that diarrhœa often arise from tainted water and foul ground.

Gapes is known by the chicken gasping through the presence of worms in the throat. At one time it was very fatal, but with the introduction of certain volatile powders, it is no longer so. The most prominent of these is Kaylde, made by Chamberlan and Smith, of Norwich.

Cramp is often met with in chickens kept in confined spaces. It is due to damp soil, or even to wooden floors, and also to weakness. The cause should be removed, and a good tonic, such as the Aromatic Paste already referred to, be given. Bathing the legs in warm water, and rubbing them with turpentine does much good in securing circulation of the blood. Leg weakness is another form of the same trouble, but in this case want of bone-forming materials and undue forcing are the cause. Bone meal mixed in the soft food and tonics are useful, but strong stock and no forcing will be the most potent factor in this direction.

CHAPTER X.

AN OMNIUM GATHERUM.

Cats—Uses for eggs—Flesh of poultry—Preserving eggs—Egg eating—Feather eating—Moulting.

CATS.

Cats are sometimes very troublesome, especially during the chicken season. The owner's cat can soon be taught that fowls must not be interfered with, and if brought up as a kitten amongst them, will seldom evince the slightest desire to injure them. Strange cats are not, however, so easily managed, and it is necessary to protect the chicks against them. Mere fencing is not sufficient, as most cats can scale a six or eight foot erection, but if a six-foot fence has a strand or two of wire above it, cats will soon find this a barrier they will not care to face. To secure the wires it is only necessary to make the posts half a foot higher than the top of the netting, and carry the strands along about three inches apart. Another plan is to lay a piece of six-inch netting broadside along the whole length of the fence, which is equally effective. Of course for young chicks where cats are troublesome it is wise to have runs fixed to the coops until they are three or four weeks old.

USES FOR EGGS.

The yolk of eggs, made into a plaister with honey and flour, of about the consistency of mustard paste, gives speedy relief to one afflicted with boils. The white used as a coating for scalds and burns excludes the air, which so aggravates the sufferings of a burned person; it is softer than collodion, therefore better, and is always at hand; it seems more cooling than the once more popular sweet oil and cotton. The white beaten with sugar is invaluable in bronchial affections, especially in hoarseness, when a little lemon-juice may be added with good results. Cider vinegar may be substituted for the lemon-juice when the latter is not available. Leather chair seats may be revived by rubbing them well with beaten whites of eggs. Leather binding of books may also be cleaned by this method, but white Roman bindings should be washed with a soft flannel saturated in soapsuds.

FLESH OF POULTRY.

In the opinion of physicians, both ancient and modern, the flesh of the chicken at three months old is the most delicate and easy to digest of all animal foods; hence it is best adapted for the stomachs of invalids, or the constitutionally weak, being the least alkalescent of all animal foods, free from irritation, and affording a mild and innoxious chyle. Age makes a striking difference in the flesh of fowls, since, after the age of one year it becomes tougher and more insoluble. The cock, indeed, after that age is only used for making soup, while the pullet is still excellent, although a more substantial viand than the chicken. While young the cockerel and hen are equally delicate. The flesh of birds differs in quality according to the food upon which they live.

Such as feed on grain and berries afford in general good nourishment. A young hen or chicken is tender and delicate food, and extremely well adapted where the digestive powers are weak. But of all domestic fowls the capon is the most nutritious. The capon, or castrated fowl, has ever been esteemed one of the greatest delicacies, preserving the flavour and tenderness of the chicken with juicy maturity of age, the flesh yielding a rich and good chyle, and without any tendency to inflammation. Indeed, the flesh of the fowl, or that fed in a state of nature and at liberty to take exercise, is universally acknowledged to excel in genuine richness of flavour.

PRESERVING EGGS.

When eggs are only to be kept a few weeks the business is a very simple one. A shelf should be provided in a cool, not a cold, place, say about from 40 to 50 degrees. This shelf should be pierced with holes large enough to let the eggs stand upright, but not to permit them to pass through. If the eggs are placed upon this board broad end downwards they will keep fresh for several weeks. When placed broad end downwards the air space does not enlarge to the same extent as when the broad end is upwards, which probably means that there is not the same amount of absorption of the egg's moisture by the outside air. At any rate it has been found that eggs keep better than when the narrow end is upwards. Wire lattice is sometimes used, and if the wire is well galvanised or painted it answers equally well. Clean, sweet bran, in which the eggs are buried, will act as a capital preservative, as will dried fine salt, and it has been shown in some of the egg preserving competitions that even common flour will keep

eggs for three or four months. These methods are not however, suitable as a rule where the eggs are to be marketed, as there is a proportion of the moisture within the egg absorbed by the preserving medium, and this is objected to by dealers who put eggs that have a large air space low down in the scale of qualities. Under those circumstances it seems necessary to adopt the lime water method of preservation, by means of which so many of the European eggs marketed during the winter have been kept. The eggs are collected and placed in large vats or tubs, some of which will hold hundreds of dozens. A preparation of lime and water is made by mixing about twenty gallons of water with about four gallons of slaked lime, into which a gallon of salt is also placed. When the water appears to have taken into solution as much of the lime as it is capable of holding, it is then put over the eggs, so as to completely cover them, leaving two or three inches of water above the top layer of eggs. It is, however, found necessary from time to time to add a little lime, or to keep a cloth full on the top touching the water, in order that as the lime in the water is absorbed or loses its effect more can be taken up. The same end can be obtained by throwing a handful of lime into the vat every few days, but this method must be very carefully carried out, for if too much be added the whole may become a solid mass. In egg preservation there are two most essential points to be observed. First, the eggs *must* be perfectly fresh, and, second, they should be infertile. The latter is a point which has hitherto not been regarded, but it is of the greatest importance.

EGG EATING.

The cause of egg eating is sometimes difficult to

determine, but usually it is simply a bad habit. A blown egg should be filled up with a strong mixture of mustard and cayenne pepper, closing up the end with gummed paper. Leave this in the nest, and if the hen tries to eat it will obtain a dose she does not like, which may prove a deterrent. Sometimes the habit is due to want of shell-forming materials, a supply of which will stop the trouble. If these fail the only other way is to make a nest in which the eggs will roll down to a lower compartment as soon as laid. Take a box about 18 inches square, with sides about 8 inches high, but no top. In this nest the bottom must be made slightly convex, so that whatever is placed therein will roll to the sides. Around the sides within the box, and about half way up, place a shelf about three inches broad, so that when an egg is laid it will roll beneath this shelf, and out of the hen's reach. It is best to fix a dummy egg in the apex of the bottom, and the sides where the eggs roll should be well padded.

FEATHER EATING.

Feather eating is one of the most annoying things that trouble the poultry keeper, and is both difficult to account for and to cure. It arises no doubt from the want of something the hens require, and which they are able to find for themselves in a natural state, for fowls with a wide range never show it. The want may be lime, or flesh food, such as worms and grubs, or the habit may be encouraged by the presence of insects in the feathers, which latter is best prevented by a dust bath. Those hens which are usually the culprits had better be removed at once, as the habit will scarcely be broken off if kept with the cock. Pluck the stumps of the feathers out of the cock, and wash the bare places

well; then rub on vaseline or olive oil, mixed with a tenth part of carbolic acid. Give the birds plenty of exercise by burying the corn and letting them work for it, and also hang a piece of meat or a cabbage by a string just where they can touch it, so that it will swing about. Some bone meal should also be given in the soft food.

MOULTING.

The moulting of birds is an operation which usually takes place every year, and is a casting one set of feathers and replacing them by entirely new ones. There is a constant change of and growth in the feathers all the year round, but only during the moulting season is there anything like regularity in the process. Moulting makes a considerable demand upon the system. Chickens hatched during the first four or five months of the year obtain their adult plumage about September or October, but this cannot be called a moult, and the first one takes place about the following September. Every year this becomes later and more protracted. Hence the plan we have advocated for laying fowls, namely, killing off birds before their first or second moult, when they are still good for table purposes, and before they have to be kept without any profit.

The time during which birds are moulting is a somewhat critical period, its nature depending very much upon the stamina and constitution of the breed. There is a considerable amount of difference in the way which the various breeds come through the moult. Some of the hardier varieties pass through it both quickly and easily, whilst others find it most protracted and difficult. The usual period of moulting for a strong bird in its first or second year, is six to eight weeks, in which time

the old feathers are completely cast and new ones take their place, but it is no uncommon thing to find weak or old birds taking three months, with the result that winter arrives before they get through with it, and they do not recommence laying before the following spring, so that several months are lost, and just at the time when their produce is most valuable. This is an important consideration, on which account a little study of the question is advisable, as it may have much to do with the profit or loss from the birds. One egg in the winter is worth more than two in the summer. All that is necessary for healthy birds is to give warm food once a day, mixing some aromatic compound with it, supplying a little grain and sand about noon. In the drinking water put a small quantity of sulphate of iron and sulphuric acid, say two pieces of the former the size of nuts, and ten drops of the latter, to a gallon of water, and of course this must be renewed every day, as fresh water is most important.

CHAPTER XI.

BRITISH BREEDS OF POULTRY.

Evolution of breeds—Rise of the "fancy"—Poultry in Roman times —Dorkings—Modern Game—Old English Game—Hamburghs—Indian Game—Orpingtons—Redcaps—Scotch Greys.

THE evolution of distinct types and races in all animal life has been at work through many centuries. In almost every country where poultry keeping has been followed with avidity the increase in varieties of breeds has gone on apace. Nature is ever sending forth fresh developments. Rigidity is not her rule. And these developments, or "sports" as they are called, when fixed by selection, natural or artificial, in process of time give us breeds, which in its turn, will reproduce with more or less certainty. Hence we find something like forty distinct breeds, and, as many of these are sub-divided, there are upwards of one hundred varieties of the domestic fowl on our list.

It is, however, chiefly within the last hundred years that this great development has taken place. Up to tha period the process, with one exception, was very gradual, and there was not the impelling force resultant from strong competition, which has had so much influence upon modern-day poultry. The exception was with regard to Game fowls. Here competition exerted

its force, and cock-fighting as a national sport was the means of evolving many varieties. When once this pursuit was prohibited attention was turned to fowls of a different kind—those characterised by external beauty or economic qualities which attracted the "fancy" of amateurs. Thus fifty years ago marked an era in this question. The increase of breeds known to us has been very rapid indeed, not only by introduction of new kinds, but also because the world has been opened out, and all countries have been scoured for fresh varieties.

Britain has been a long time famous for its poultry, and eventually the pleasurable aspect has ever had great influence. For instance, Cæsar stated, when our island was conquered by the Romans, "The inland parts of Britain are inhabited by those whom fame reports to be natives of the soil. . . . They think it unlawful to feed upon hares, pullets, or geese; yet they breed them up for their diversion and pleasure." And what literature is available to us shows that throughout the intervening ages the same influence has been at work. Until about one hundred years ago, however, nearly all efforts in the direction of improvement were concentrated on the Game fowl.

Without further introduction it is now our duty to describe the leading breeds of poultry, so that the intending breeder may be able to determine which most suits his fancy or meets his requirements. Certainly there is a very wide range for selection. I shall not, however, deal with every breed known in the world, but rather with those which have, or promise to, become popular. For facility of reference and proper discrimination it will be better to classify them according to the countries or continents whence they or antecedent types originated, or have been fixed for a long period,

DORKINGS.

Sub-varieties: *Dark, or Coloured; Silver Grey; White; Cuckoo.*

There can be no doubt that the Dorking is one of the oldest of our domestic fowls, if not the oldest, but there are no definite records to show when it was first bred in this country, or whence it was obtained, except in the latter case the supposition that it was introduced by the Romans, who evidently possessed a fowl with similar characteristics. On this point Moubray says that it "is undoubtedly a breed of great antiquity, having been noticed and described in the first century of the Christian era by Columella and Pliny; and there seem fair grounds for supposing that these birds were introduced into this country by the Romans, among whom they had attained, at that early period, some celebrity, and were much esteemed: with us but few fowls can boast of such high and long-continued reputation as the Dorkings. It has been suggested that Shakespeare was acquainted with the superior qualities of these fowls, and that he alludes to them in his 'Henry IV.,' when he makes Justice Shallow, of Glo'ster, order a couple of short-legged hens for his guest's repast." The chief distinctive mark or characteristic of the breed is the presence of a fifth, or supernumerary, toe, springing behind, a little above the foot, and below the spur. It has been sought by various writers to deprive Dorking of the honour of being the original and principal rearing-place of this justly celebrated variety; and it is asserted that the true Dorking fowls are raised at Horsham, Cuckfield, and other places in the Weald of Sussex; and that the ancient and superior white fowl from Dorking is

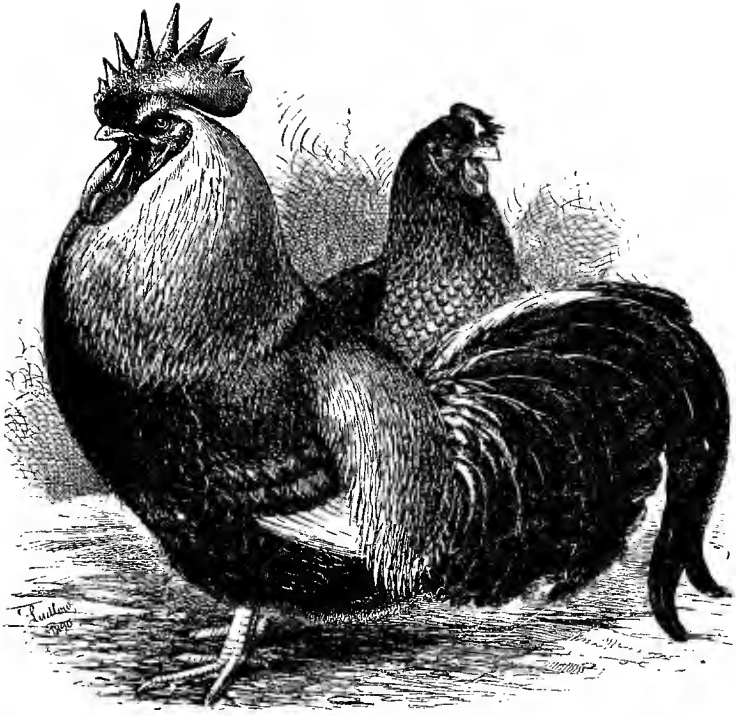

FIG. 19. DARK (OR COLOURED) DORKINGS.
Bred by and the property of Mr. W. S. Pinsent, Rose Hill, Newton Abbot.
Winner of Cups, Birmingham, 1889.

a degenerated race compared with the "improved" Sussex breed. It has also been claimed that the Dorking does not owe its origination to Surrey or Sussex at all, but comes to us from the north of England, for in Wingfield and Johnson's Poultry Book, published early in the fifties, we find it stated that "some writers have even ventured to assert that the native place of the Dorking is among the Cumberland hills." It is certain that in that region is a race of five-toed fowls, and bearing other points of resemblance to the Dorking. These are known in Cumberland as the "Jew" breed, but it appears to be called still farther north "the silver pheasant kind," and at Edinburgh "the old Scotch breed." In the *Gardeners' Chronicle* of 1848 we find: "This Jew breed is said to be very ancient in Cumberland, and it is still very usual for the Lancashire men to carry off any fine birds of this race which they see amongst the mountain cottagers. However, it would be a vain attempt to trace the origin of a breed which was described nearly two thousand years ago by a Roman writer; and, as Roman stations abound in Cumberland, it is quite possible that a poultry-fancying Prætor, fifteen hundred years since, might send or carry in the same year the first couple of Dorking fowls to the bank of the Thames, and to the old camp at Ambleside, or Castle Hill near Keswick." Columella's remarks, to which reference has just been made, were as follows: "Let them be of reddish or dark plumage, with black wings. . . . Let the breeding hens be of robust body, square built, full breasted, large heads, with upright and bright red combs. . . . These are believed to be the best bred with five toes." The latter part of this description would stand for the Dorking of to-day. What is desired in this breed is a long, broad, and deep

body, square built, with shortish legs, and capable of carrying a large amount of flesh on the breast. A most important point in the Dorking is its white feet and legs. Some people think that dark-legged fowls cannot have the same purity of flesh as those with white feet; but this is an error. Still, the point referred to is greatly in favour of the Dorking for table purposes. Further, there is the fifth, or supernumerary, toe, which is of no value in itself, but simply a sign of race purity, and for that reason should be maintained. No bird without this peculiarity would be accepted as pure bred, and all dark or spotted-legged Dorkings should be rejected.

It is often said that the Dorking is not a hardy fowl. This is, however, misleading. The Dorking cannot certainly be kept on any soil or in any place, and damp, cold ground is fatal to it. But the fact that it is so largely bred in the north of Scotland, away in the extreme north of Ireland, amongst the Cumberland hills, and in numberless places which are cold and exposed, shows that it is a hardy fowl in all respects save one—that it is unable to stand damp, clay soils. No matter how cold the place may be, so long as it is dry and free from clay, it will do well—at least, that is the experience in this country. It is a fair layer, as good as are any of the table varieties, makes a capital sitter and an attentive "biddy," and, of course, is one of the finest that can be found on the table. This is partially due to the readiness with which it will fatten, for without this quality it would be impossible to ripen the flesh as is now done. The flesh is exquisitely white, and very delicate in its texture. In fact, it is difficult to imagine a finer fowl on the table than the Dorking, and it is equal to nearly all the best French varieties, though I am inclined to think that the La Besse and the La Fleche sometimes surpass

it, but they would never do so if the same system of fatteniug was adopted here as in the districts of France where these two varieties of fowl are so largely bred. Nowadays there are vast multitudes of fowls sold as Surrey or Sussex which have simply been fattened in those counties, but were never bred there, and have not a trace of Dorking blood in their veins. But the system of fattening is so excellent that they make good birds, but, of course, not to be compared with the splendid fed Dorkings which the best poulterers supply.

The advice which must be tendered to those who think of keeping Dorkings is that they should first consider whether the place they have is suitable, but unless this is the case they are better left alone. Then, second, the demands of the market or the needs of the poultry keeper must be regarded. If the demand is for table fowls nothing could be better, provided that anything like a fair price can be obtained for them, as it would not pay to breed Dorkings to sell at three shillings the couple. If eggs are chiefly in demand Dorkings are of no use, as they are only moderate layers. The egg is large in size and very fine in flavour, the shell being pure white.

Dark Dorkings. By reason of their larger size this variety has gained greater prominence than the others. It is a big, massive bird, carrying a large quantity of breast meat. There can be no doubt that it is the result of a cross thrown into the Dorking, Mr. John Douglas, formerly of Cumber, Worksop, being the originator. For a time the result was probably harmful, but the benefit of the cross is now seen in added size and greater hardihood of this variety. The question of colour is not much taken into account, so long as other points are observed. Dark Dorkings have fair-sized single combs, the cocks a

sweeping sickle tail, and are clean legged, feathers on the shanks being tabooed in this family or tribe.

Silver Grey Dorkings. It is generally claimed that the Silver Greys are purer than the Darks, having descended from the old light-coloured and silver-plumaged variety, without any admixture of foreign blood. In cocks the colour is clearly defined, and the effect is very pleasing. The head, hackle, back, shoulders, and wings are silvery white; the breast, under-parts, thighs, and tail black; and in hens every feather is silver grey with pencilling of darker grey, except the head and hackle, which are silvery white with darker grey or black marking, and the breast salmon red, the effect both in cocks and hens being very pleasing. As a rule the Silver Greys are not so large as the Darks, but have the same splendid fattening qualities.

White Dorkings. Most writers appear to think that the White Dorking is the oldest of all the existing Dorking breeds, and, from the fact that the soil of Surrey and Sussex has the tendency to whiten the plumage of fowls reared upon it, this theory is very probably correct. Tegetmeier thinks that the White Dorking is the parent of all the other varieties of Dorkings, and it has been suggested that these latter have been formed by crossing the White with the Sussex fowl. White seems to have existed before all the records which we are able to find were written. Now they are not so popular in their native county as are the coloured, doubtless for the reason that the latter are larger. The White Dorking differs from the other varieties in one or two important respects. All the others have single combs save the Cuckoos, though in the Dark variety this is not insisted upon. But the majority have single combs. The Whites have invariably rose combs, and this is a great improvement,

as the comb appears to fit in with the general contour of the fowl. The White Dorking is not usually so heavy as are the others, though individual specimens have been produced quite as large. These are, however, the exception, not the rule. And the Whites are rather lighter in build, not quite so squat as the Coloured or Silver Greys. The square, brick-like body which is the type of the true Dorking is not seen so plainly, but we do not approve of the light, leggy specimens which are sometimes found. There is some undiscovered natural reason why white-plumaged fowls are not so good in the colour of their flesh as those darker hued, and hence they do not command the same favour. But for parks and lawns, where beauty and table qualities are desired in unison, there is no more pleasing fowl.

Cuckoo Dorkings. At one time this breed was better known than now, but an attempt is being made to make it popular. Least of all does it fill the eye, and it also lacks the size of either the Coloured or Silver Greys. Its plumage is "homely," to use an American expression, but it is a useful variety which might well be cultivated.

Sussex Fowls. These are evidently descendants of the older type of Dorkings, but are not very much bred, and are without the fifth toe.

MODERN GAME.

Sub-varieties : *Black-breasted Red ; Brown-breasted Red ; Pile ; Duckwing ; Black ; White.*

The Game fowl is regarded by all students as the typical English breed, and if there is any variety of domestic poultry which deserves the title it is this. No

breed can, in the strict sense of the naturalist, be regarded as an English variety, for the common fowl is not indigenous to Britain. But it is quite admissible for the ordinary poultry keeper to use this term, for whatever has become acclimatised to any country is, in the modern interpretation of the term, native. Wherever was the origin of the Game fowl—and this is not regarded as uncertain—it is a fact that this breed has been known in Britain for hundreds of years. Game fowls were probably in the country before the invasion of the Romans under Cæsar, but records go to prove that the sport of cock-fighting was introduced by the Romans, followers of that emperor. This pastime held its own for a long period of time, and it is only in comparatively recent years that it has been regarded as disreputable in Britain. It is still largely followed in America and Australia, where the conditions of life, in the newer sections of those countries especially, give opportunities for it which are not to be found in older and more closely populated lands. In some of our large towns there are yet to be seen the old cock-pits, where, but a generation ago, fortunes were lost and won, and the leaders of society were not ashamed to be seen gathering for the purpose of witnessing an encounter between two fiery combatants. This sport is yet practised surreptitiously by many persons, who make the most elaborate preparations to prevent capture, for if taken by the police they are severely punished.

Since the time when cock-fighting was a recognised sport a great change has come over the type of fowl chiefly bred. Those now under consideration are known as Modern Game, to distinguish them from what are called "Old-fashioned Game." The differences between them will be noted when treating of the latter. It may,

however, be briefly stated that the Modern Game are very much longer in the leg, have a less profusion of feathering, and want that strength and compactness of body which was essential to a fighter.

Black-breasted Reds. These are the most popular

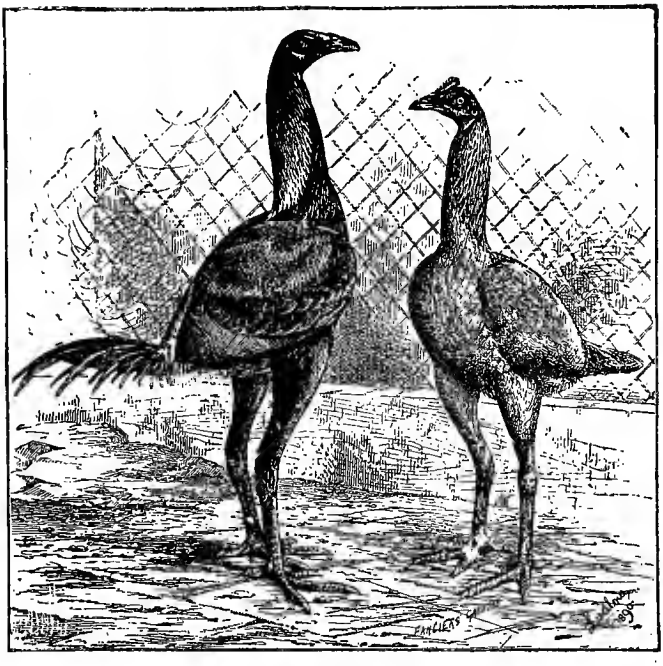

Fig. 20. Modern Game.

of all the Game fowl family, and have the greatest amount of what is known as style. The cocks have lustrous black breasts and under-parts; neck hackle, orange or orange-red; back, rich red; wings, red and black; legs, dark or leaden. Very high prices have been

paid for specimens of this variety, and one hundred guineas has several times been given for a cock.

Brown-breasted Reds. At one time these were very sombre in colour, but of late the richer hued lace-breasted lemons have attained greater favour. In cocks the face is purplish-black, or "gipsy," as it is called; eyes, dark brown; head and neck hackle, bright lemon striped with black; the back, saddle hackles, wings, bow, and shoulder coverts, bright lemon; breast, black with lemon lacing; the tail, as in all Modern Game, small. There is another colour, in which orange is substituted for the lemon tinge. Brown-breasted Reds are best of all Modern Game types for table purposes, carrying a large amount of breast meat.

Piles. A good coloured Pile is very handsome indeed, and they may be given the first position for external beauty. In cocks the eyes are a bright red; neck hackle, clear orange or chestnut: breast, shoulder coverts, parts of wings, thighs, and tail, white; back and parts of wings, red; legs, yellow or willow. In hens the breast is salmon, neck light gold, and other parts of plumage creamy white.

Duckwings. These very handsome birds have plumage with variations, black, grey, silver, and white in the cocks, and of salmon, grey and black in the hens.

Whites and Blacks. These are respectively self-coloured. Hence the desiguations given to them.

OLD ENGLISH GAME.

Considerable attention has of late been paid to the old-fashioned type of English Game fowls. There can be no question that since the arena of conflict has been changed from the cock-pit to the show pen, a very great

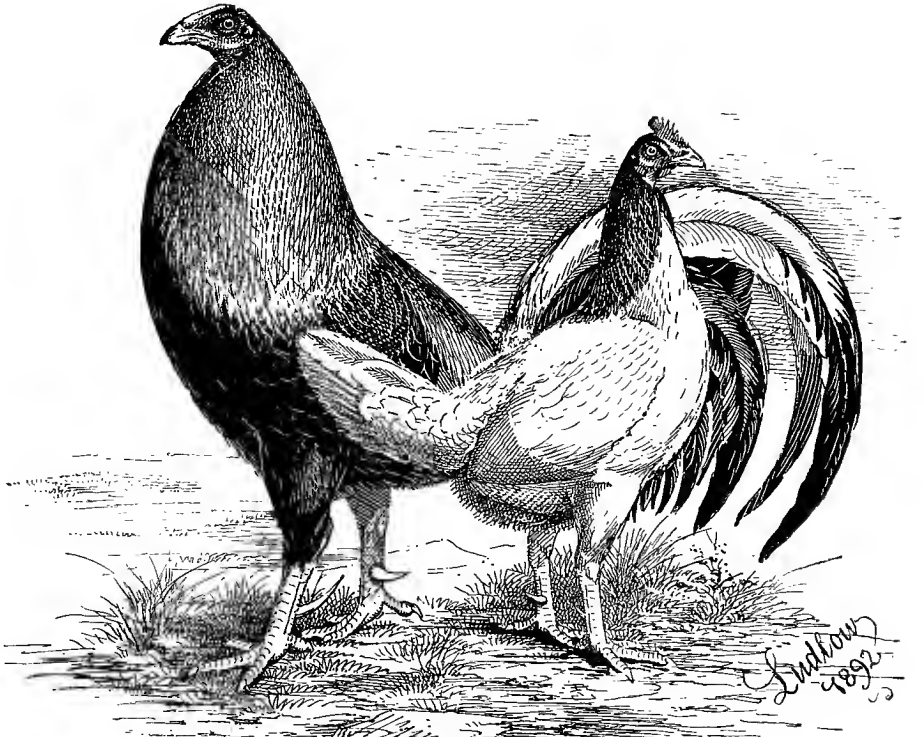

Fig. 21. Old English Game.

Bred by and the property of Mr. J. W. Simpson, Abbey Town, Silloth.

Winners of numerous First and other Prizes.

alteration has come over the type of our breeds of Game fowls. Of course breeders of the old varieties say that the fowl has been entirely spoiled, and that it is not what it once was. This is, however, a matter which it is not necessary for us to discuss, for the simple reason that the old Game fowl was bred for the system of fighting, and that the abolition of that system of cruelty has induced changes in form and type is only what might have been expected. At the same time we think that those who are attempting to save the old breed of Game fowl from extinction are to be commended, and we hope their efforts will be successful. Our object now is to show the difference between the old and the new, both of which have special characteristics and beauties of their own.

The following description of the old-fashioned Game fowl was written some years ago, and may be taken as a correct representation of the birds thirty or forty years ago. In these birds there was seen elegancy of contour and perfect symmetry in every part. The head small, narrow, and inclined to be long. Eyes full and bright, with an expression of courage to the very last. Bill curved and stout at the base. Neck rather long, strong and well-set; somewhat arched, with a sleek, full hackle of regularly placed feathers which reach a back broad at the shoulders, flat and sloping. Breast ample and broad. Wings large, strong, and well turned, and drooping downwards over part of the thighs, and carried with an appearance of readiness to assault an enemy. The body round and compact, tapering gradually towards the tail. Thighs short, strong and firm in muscle, with shanks which are powerfully set on, somewhat long as compared with the thighs, and well placed apart. Feet flat with good-sized toes, and claws of good dimensions.

The rump hackle, like the neck hackle, is finely feathered, long and abundant. The tail is a point of special attraction in the Old-fashioned Game; it is of imposing outline, and has an abundance of finely turned feathers, which are carried gaily and well together. It should be at right angles with the back. The plumage is very hard, close, and lustrous, showing quality and purity in every feather. The spurs are low, and the hind toes well placed, preserving equilibrium in retreating backwards.

If we compare this with the type of Game fowl accepted now, the difference is very apparent. The standard for Modern Game says that the head must "be long, lean, and bony," with a strong beak. The hackle is short and close; the wings rather short, powerful, standing out from the body at the shoulders. The tail small, carried low, and very close, with narrow, hard sickle feathers, tapering to a point. The thighs lengthy and muscular, standing out from the body, but slightly sloping towards the hocks; and legs long, bony, with fine scales, and not flat either on the shanks or hocks, the latter standing well apart, and not turned inwards.

From this it will be seen that the old-fashioned type of Game fowl and that seen at the present day differ very materially, especially in the head, the hackle, the tail, the length of thighs and legs, the former being a much closer set and heavier type of bird. But its supporters claim that not only is there the difference seen in the external appearance, but there is a very marked alteration in the laying powers of the fowls. It is generally admitted that the Game fowl of the present day, by which we mean those met with in the show pen, are poor layers. This is claimed not to be the case with Old-fashioned Game, who are said to be good winter layers, in that respect finding few superiors.

We have seen it recorded that hens of this variety have produced eggs all through a winter, and not in isolated cases either. The flesh of the Old-fashioned Game fowl is beautifully white, and this is another difference from the Modern Game, which, though rich in the quality of their flesh, cannot be called white-fleshed. As to the colour of these birds there is more variety than is found in the modern show pen, for the exhibition system has undoubtedly been the means of concentrating attention upon a few colours. The colours chiefly bred are Black Reds, Bright Reds, and Brown Reds, but the varieties and colours are legion.

HAMBURGHS.

Sub-varieties: *Gold Pencilled; Silver Pencilled; Gold Spangled; Silver Spangled; Black.*

Certain it is that there exists no more beautiful variety of domestic fowl than the Hamburgh, which, with its sprightly form, neat shape, intelligent manner, and active habits, has given a perfection which is excelled by no other breed. It is, furthermore, the best layer we possess, and it is no uncommon thing for hens to produce 220 to 230 eggs in twelve months. But unfortunately the eggs produced are too small for marketing purposes. If any one who has plenty of space at command, and desires simply to supply his own table with eggs as well as to have pretty birds, any one of the Hamburgh family is eminently suited to meet his requirements. But it does not bear confinement, and this fact must be kept in view.

Hamburghs really comprise two distinct families—namely, the Spangles and Blacks, or Pheasants as they were called, are English, having been bred for generations

in Lancashire and Yorkshire, where most of the finest specimens are produced. But the Pencilled came originally from the Continent, and at one time were known as Dutch Everlasting Layers. Perhaps the finest specimens came by way of Hamburgh, and thus obtained the name, which is an undoubted misnomer. By uniformity of type the two races are, however, now really one. All have the same style of body, though slighter in the Pencils, a neat rose comb, covered with small points on top, and a pointed spike behind, and white ear-lobe, or deaf ear. But Hamburghs have never won the favour they deserve; and this is due to the amount of trimming which has been given to the combs for exhibition purposes.

Spangled Hamburghs. There is no more beautiful variety of the domestic fowl than the Spangled Hamburgh. The clear, rich golden bay of the golden variety, and the clear silvery white of Silvers, with their respective large round black moons or spangles, and the small, neat head with shapely rose comb, offer a combination which is found in no other breed. And they have also the merit that they are economical fowls to keep, for they are the most prolific of all layers, and, with the Black Hamburgh, easily stand at the head for fecundity. By the exercise of a little care size of the egg could be enlarged, and selection would go far to remedy this one defect. There are already some families which lay larger eggs than do others. Spangled or Mooney Hamburghs are really the old Lancashire or Yorkshire pheasant breed, and owe all their perfection to the careful way in which they have been bred in these two counties. Long before the era of modern shows there were small village exhibitions at which the colliers, hand-loom workers, and others of the industrial population competed with each

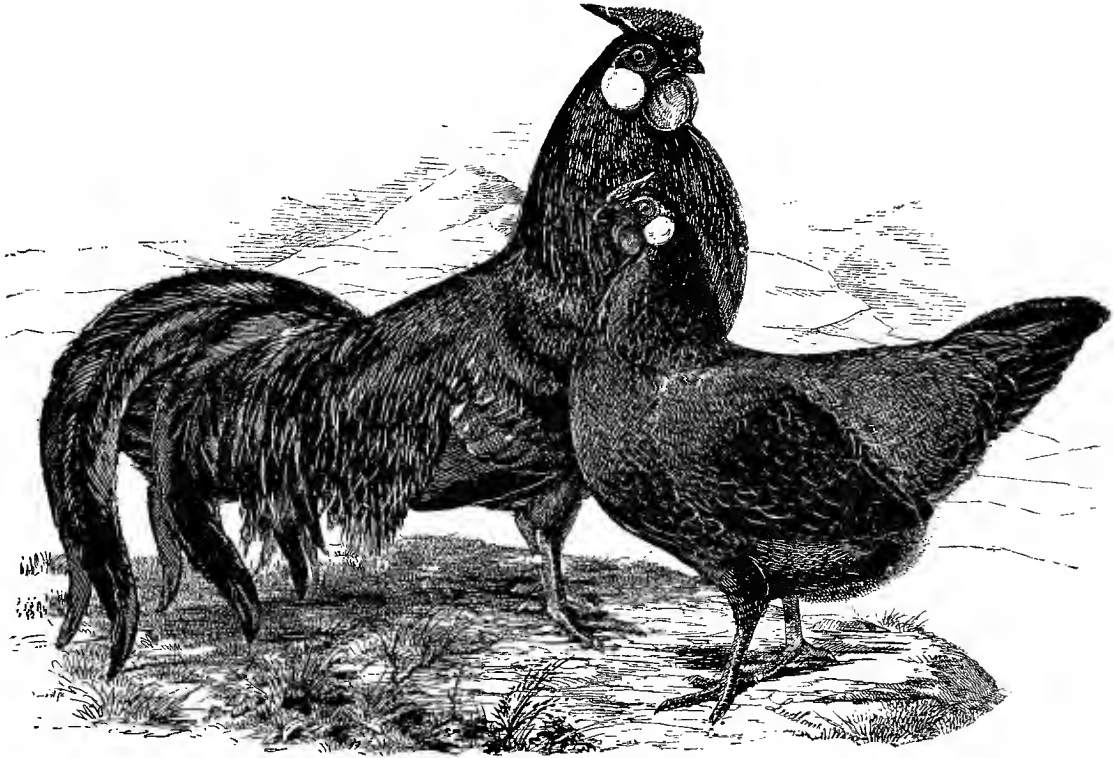

FIG. 22. BLACK HAMBURGHS.

other's fowls. In those days hens alone were shown, for the cocks were regarded as too ugly, and it was only by introduction of a cross between the Yorkshire and a Mooney cock that the gentlemen were made fit for show purposes. The old style of showing these birds has been already described (page 82). This system, which would be utterly impracticable nowadays, doubtless had much to do with the perfection to which the breed was brought, for each breeder learnt just in what way his bird was deficient, and he could seek to remedy the defect. It must here be noted that two pens of fowls are required to breed exhibition stock, one for cocks and the other for hens.

Pencilled Hamburghs. As already stated the Pencilled Hamburghs, of which there are two varieties, Golds and Pencils, as in Spangles, are rather lighter in body, and are more ornamental than useful, though very prolific layers. The eggs, however, are even smaller than those produced by Spangles and Blacks. In Pencils the feathers are pencilled or barred with black, upon the ground colour of golden bay or white respectively, and the effect is very pleasing indeed.

Black Hamburghs. Perhaps the most popular of all the Hamburgh tribe, amongst those who desire a good layer of medium-sized eggs, is the Black. At one time it was not very often seen, but the efforts of a few breeders have brought it rapidly forward, and its own intrinsic merits have won for it a position it is not likely to lose. It is certainly one of the handsomest of fowls, and a most prolific layer, producing eggs larger than any other variety of Hamburghs. It is also hardy, and can be kept better in small spaces than can the Spangled or Pencilled. It is larger in body, and altogether a first-rate breed for either ornamental or economic purposes.

The origin of the Black Hamburgh is doubtful. Some have thought it to be the result of a cross between the Silver-spangled Hamburgh and the Black Spanish, but there is no reason for this theory. It may have arisen from the fact that there has probably been an intermixture of the Spanish blood in order to obtain a larger white ear-lobe, and that the majority of the present birds have some of this cross in them, but that there was a breed of this colour in the north of England very many years ago there does not seem any reason to doubt. The more likely thing would be that the Blacks were the oldest of all the existing varieties, and the others owe their origin to variations from it. Of course, there would not be much difficulty in producing Black Hamburghs from the Silver-spangled, and it is possible that the development has been in this way. But there can be no doubt as to the purity of the breed and its claim to a distinct position. At one time they were called Black Pheasants, in order, we suppose, to denote their relationship to the other pheasant breeds. The late Mr. R. Teebay, of Preston, testified that "they were formerly not so elegant as now in shape. Little regard was paid to symmetry, but the most weight was given to the resplendent green shade; the ear-lobe was smaller than it is now, and the face a brilliant red. . . . The Black Pheasant formerly was much shorter in the leg, in fact, shorter in all its parts than we now see." This brilliancy of colour is still a great point in the show pen, but at the same time more attention has been paid to the other points, and thus we have a bird which is much superior to that formerly seen. It has the true Hamburgh shape, except in a very few instances where the Spanish cross comes more than usually to the surface; and there can be no question as to its beauty.

INDIAN GAME.

Considerable attention has of late been given to a variety of fowls common in one section of England, but formerly very little known outside of that district. We speak of the breed called by some Indian Game, and by others Cornish Game. The latter cognomen at once denominates the part of the country where they are found —the south-western corner of England—from which has come another of our most useful varieties, the Minorca. It is very evident that though the name Cornish Game may be given to this race of fowls they owe their origin to the Eastern Hemisphere, whence come all our fowls. Probably the Cornish coast being the first at which vessels call on their way home, or rather did in the olden days, gave the residents there an opportunity of picking up rarities, and in this way the Indian Game would be first introduced, soon to make way by its own intrinsic merits. These birds have won a great amount of favour, and are valuable for crossing with Dorkings or the best specimens of French table poultry, to produce fleshy, early maturing chickens. Some of the finest specimens ever seen are from the first-named cross. Pure Indian Game are bony and have yellow flesh, but grow to a large size, and 10 lb. to 11 lb. cocks are by no means uncommon. Writing upon the question of the table qualities, an anonymous correspondent of the *Live Stock Journal* says that the Indian Game fowl has, however, yet to be recognised as one of the very best of table fowl, not only as a pure breed, but as having the properties which are most desirable for crossing purposes. Possessed of a marvellous development of breast, in which important particular it is unsurpassed by any other

breed of domestic poultry; singularly close in plumage, skin of an excellent colour, and fine juicy flesh, without an excess of bone, and above the average size—in fact, a heavy bird, much heavier than appearance suggests. Indian Game has also the advantage of being a remarkably hardy bird. For all practical purposes a profitable table fowl should have a capacity for fattening, or, rather, flesh forming, without an undue waste of food. It does not follow that because a bird is a large feeder that it will add flesh and prove profitable to the farmer. There is as much difference in the aptitude of the various breeds to fatten as there is in egg production, and the majority of fatteners of poultry in this country generally find this particular branch of poultry farming unprofitable, because they cultivate unsuitable breeds, the fattening element being wanting.

ORPINGTONS.

Sub-varieties : *Single-combed : Rose-combed.*

Whilst we should do all we can to retain amongst us those varieties of poultry which have proved their value through a long series of years, it is equally desirable that new breeds should from time to time be introduced. Without these we should actually be receding rather than advancing, for there can be little question that in nearly all animals there is a tendency to lose characteristics which made them at one time pre-eminent, more especially if there is great want of competition. There are many varieties which once held a high position, but they are simply kept for fancy purposes, or by old-time admirers. They have been outstripped in the race, and must now take a back seat.

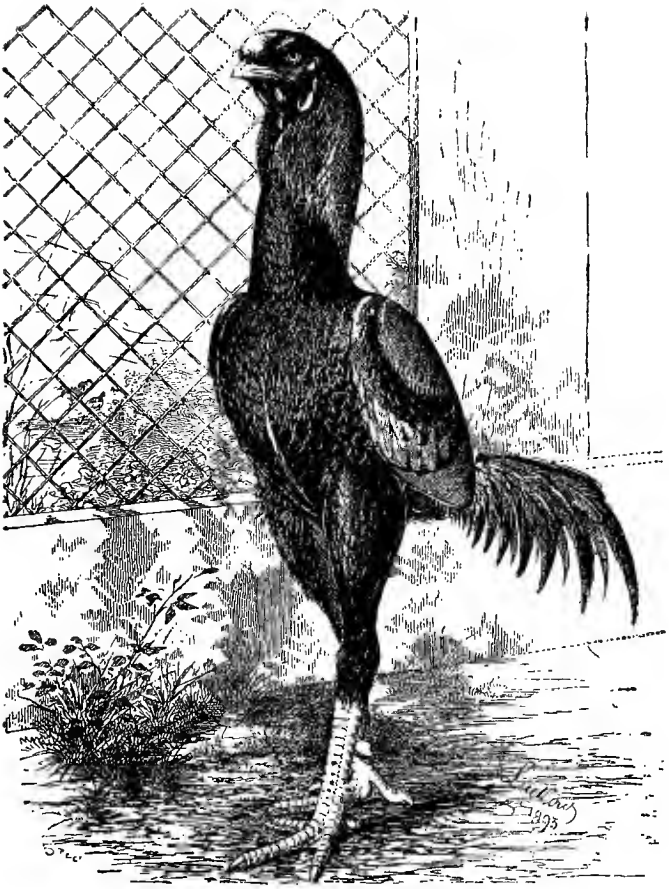

Fig. 23. Malay Cock.

Amongst new English breeds the only one which has really taken hold is that known as the Orpington, so named because its originator formerly resided at that Kentish village. But this name is really a misnomer, for though there have been dashes of Plymouth Rock and Minorca introduced, the Langshan was the true foundation, and the breed is to a large extent a clean-legged Langshan. However, we suppose that the man to whose ingenuity we are indebted for the variety, Mr. William Cook, has a right to call it as he pleases, in absence of any authority to whom new breeds must be referred ere they are accepted and given a recognised place. In this respect we are decidedly behind American fanciers, for the American Poultry Association does not include any breed into their Standard of Excellence which has not been proved to their satisfaction to be worthy of that position. Whatever we may think of the name given to this variety there can be no two opinions as to its value for practical purposes. They have the fine laying and table qualities of the Langshan, grow rapidly and to a large size. Cockerels at six months will weigh 9 lb. to 10 lb. each, and the flesh is excellent in flavour and quality for an all-round breed. They are very handsome in appearance, and being clean legged is an advantage which they possess over the Langshans, at any rate for ordinary poultry keepers. As winter layers they occupy a high position, although in this respect I do not think that they can claim to be better than the breed just named. In appearance they are handsome, being somewhat shorter than the Langshan, but it is surprising how strongly the latter type predominates, and but for being clean legged many could be exhibited as of that breed. They have single or rose combs, for there are now two varieties.

REDCAPS.

What must be regarded as a variety of Hamburgh is the Redcap, though it has never yet come into the regular list of that breed. This is due to the fact that it is only to be found in one or two districts, namely, Yorkshire and Derbyshire, chiefly in the latter, for it is overshadowed in Yorkshire by its finer and more handsome brethren. The Redcap is a Gold-spangled Hamburgh as found before the latter breed had been produced in its present state of perfection. The Redcap cannot in any way compare with the Spangled Hamburgh in the way of beauty, but it is very much larger, and whilst quite as prolific lays larger eggs. They are also very hardy, capital winter layers, make fair table poultry, and thrive best in hilly districts, being the mountaineers of domestic fowls. In colour of plumage they are very similar to the Gold-spangled, but the spangling is not nearly so regular or the colour so rich. The most prominent feature in this breed is the comb, which is very large indeed. It is of the rose character, but developed very greatly, and in some cases hangs over to one side, giving the bird a very coarse appearance. But for this fact we are sure that the Redcap would have become more popular, as it is probably the best laying fowl known, both as to the size of the eggs and number.

SCOTCH GREYS.

This breed has been described as "a large Cuckoo Dorking without the fifth toe," but they are rather longer in the leg than the Dorking, and scarcely so square in body. Yet the description given is not very far from the truth, for the Scotch Grey partakes of the Dorking type more than any other of our English breeds. How

the breed originated I have been unable to discover, but they have been known and bred pure for a long period of time, and there is no suspicion that they are a recently manufactured variety. I am inclined to think that it is an offshoot of the Dorking. It is, as its name implies, a native of the northern half of the British Isle and has been very popular there.

As already stated, the shape and carriage of the Scotch Grey are not the same as those of the Dorking. The former is more upright, partaking somewhat—though very slightly—of the Asiatic carriage. The Scotch Grey does not grow to the same size as the Dorking. Cocks weigh from 8 lb. to 9 lb. when a year old, and the hens as a rule about a pound less. The groundwork of the plumage is a beautiful blue-grey, with neat moons of a metallic black on every feather. In both male and female the marking or pencilling should be equal all over, from the tiny feathers on the face to the sickles, though, of course, it is easier in this respect to say what is wanted than to obtain it. The sickles themselves are often mottled with black or white, and not infrequently are actually of the same colour. The comb of the cock is large and single, the wattles proportionately long, and with the face and ear-lobes should be of a bright scarlet to look well. In the hen the comb should fall slightly over to one side, but by no means as much as is the case with members of the Spanish tribe. The Scotch Grey is a capital all-round fowl, and for that reason is very suitable for farmers. It is a good layer of large white eggs and a non-sitter. As table fowls they are very good in the quality of their meat. The Scotch Greys have a very decided advantage over their cousins, if we may call the Dorkings by that name, in that they are much hardier, and can therefore bear being kept on soils where the others would die off,

CHAPTER XII.

EUROPEAN BREEDS OF POULTRY.

French (Crevecœurs, La Fleche, Houdans, &c.)—Polish—Mediterranean (Andalusian, Leghorn, Minorca, Spanish)—Russians.

By the term European we mean those which owe their origin to countries on the Continent, outside of the British Isles. Some, notably those of the Mediterranean type, have been greatly modified by English breeders, and the finest specimens are to be found in this country, and two at least of French breeds have distinct differences in England from their original character.

FRENCH.

Sub-varieties: *Crevecœurs; La Fleche; Houdans; La Bresse; Le Mans; Courtes Pattes*, &c.

It is worthy of note that table qualities are more prominent amongst French than the purely British poultry. Egg production is by no means disregarded, but the greater proportion of fowls found across the English Channel excel in the former quality, which fact is to be accounted for in that fowls are more frequently seen on French tables than is the case at home.

Crevecœurs. The Crevecœur is chiefly bred in Normandy, whence vast numbers are sent to the Paris

markets. It is the product of that fine soil which has done so much in producing the splendid apples and magnificent butter for which this department of France is famous. This, added to careful breeding, has resulted in the grand fowl under review. Some time ago M. Lemoine, the well-known poultry authority in France, described the breed as follows: "This magnificent fowl," that gentleman said, "has entirely black plumage. It can attain to a very large size, and is much esteemed for its white and fine flesh. Its chest is very open, its legs strong, black and well separated, thus indicating an animal firmly built, especially in the case of the cock, which has a magnificent structure and manner. The hen is of a large size, and has the appearance of great weight. The breed derives its origin from Normandy, and it would appear that, originating on a soil that is rich in herbage, it so easily finds ample nourishment that it does not feel the necessity for running far—it has only to lower its head and eat." The cock has a full-tufted plumage, entirely black with violet reflections. Its head has also a peculiar aspect. The beak is black, with high and very open nostrils. The bird has a strong tuft of fine and reversible feathers. Below the beak it is ornamented with a thick cravat and a pointed beard. Lastly, the comb of the cock has two pointed horns at the top, is wide at the base and separating above. The Crevecœur is very sensible to cold and fogs; cold is a disease to which they are essentially subject. To avoid it their roosts must be well wetted every evening, and they must be kept in the middle of the fowl-house.

HOUDANS. This variety has been long and favourably known in Britain. It is one of the best laying of French fowls, excelling many better known varieties,

and giving large eggs with dead-white shells. It cannot compare with the Crevecœur or La Fleche in table qualities, but yet it is a moderately fleshed bird, and is certainly hardier than either. The Houdan is generally admitted to have resulted from a cross between the Polish and Dorking, the former giving crest and plumage, and the latter pale, almost white, legs and feet, ornamented with the fifth toe. The crest is not nearly so large in France as in England, and the increase in size is no improvement for practical purposes, making it far more subject to cold, especially in moist climates. The comb is peculiar. It is called leaf, resembling two leaves spread apart, and is large. The plumage is speckled or pebbled, without any decided uniformity of markings. The legs are clean, that is, have no feathers on them, and have the characteristics already referred to. We think that for practical purposes French Houdans are better than English, the latter having been greatly bred for crest, feather, and size. Our best layers are never the largest fowls, and excess of feathering always reduces productiveness. Still Houdans are very valuable fowls.

La Fleche. In the La Sarthe district of France are found many of the best breeds of national poultry, and there is the home of this variety, which is the doyen of ordinary French table fowls. At the great Paris shows to La Fleche nearly always falls the Prix d'Honneur, or Champion prize, for fatted fowls. It is a black-plumaged fowl, with great length and massiveness of body, lending itself to early maturity, and giving magnificent quality of flesh, with extreme delicacy of skin. It has a neat head, surmounted by a peculiar small horned comb, and, like the Creve, has dark or leaden coloured legs, which fact shows that the prejudice

in favour of white-legged fowls for table purposes has no real basis to warrant it. The La Fleche is only a moderate layer, and is pre-eminently bred for its table qualities.

La Bresse. The variety known by this name is regarded as the best of all the French fowls for table purposes. For flavour of meat and tenderness we have never met its equal. It was decidedly in advance of the Dorking which we had on the table at the same time. Some of this might be due to feeding, for the French fowl has been fed according to the Gallic method, whilst the English fowl has been prepared in the way which is usually the case for our home market. The flesh of the former really melted in the mouth, and it was a rare treat. This breed is divided into two varieties, namely, the grey and the black. The former, which has really a pencilled marking, is chiefly bred in the department of the Bourg, and the latter, black in plumage, in the Arrondisement of Louhans. Hens of both these varieties are good layers, and very rarely sit. Eggs from the blacks are much the larger, weighing nearly two and a half ounces each, whilst the eggs of the greys only weigh about $1\frac{3}{4}$ ounces.

Courtes Pattes. This quaint little variety has been known to a small extent in England for a few years. But it has never won any great amount of popularity, doubtless due to the fact that their peculiar shape has led people to the opinion that they are more ornamental than useful. This is, however, far from being the case, as they are fairly good layers, capital table fowls, and reliable sitters and mothers. The plumage is entirely black, and they are medium in size. The peculiarity consists in the shortness of the legs, which causes them to walk with a strange gait. They are on this account

very suitable indeed for keeping in gardens, as they do not scratch. They are very hardy, and grow at a rapid rate.

Le Mans. Another variety of fowls whose home is found in the department of La Sarthe, whence come the La Fleche and the Courtes Pattes. It is a very large fowl, not nearly so pleasing in appearance as either the La Fleche or the Crevecœur, but withal of a very useful type. It is large, a non-sitter, and the flesh is excellent. From it is made one of those epicurean dishes for which France is so famous, namely the savoury "Poule de Mans." The system of rearing in the district where it is bred is one likely to bring out the best qualities of a fowl, and there are those who think that many of the merits of this breed are due as much to the rearing and feeding as to the intrinsic merits of the fowl itself.

Other Varieties. There are several other varieties of French fowls which it is not at all necessary that we should describe at length. Some of these, although given entirely distinct names, are but variations of one or other of the standard breeds. In this country we endeavour to give all the varieties of one breed the same name, merely defining their variations by the colour affixes; but in France it is not so, and the effect is misleading rather than helpful. We have noticed that this course is followed to some extent in America, but it is to be deprecated, and we trust may be discouraged. Thus in France the De Mantes is merely a variety of the Houdan. There is, however, one breed which deserves special mention. I mean the Barbezieu. This appears to be a coarser edition of the Minorca. It has the same type of body, and we should imagine owes its origin to the same source, but has not had the advantage of the careful breeding which has fallen to the lot of the English

Minorca. The names of the other French varieties need only be mentioned. They are the Gournay, the Coucou de Rennes, from the Ardennes, and the Cussades, from the Gascony district.

POLISH.

Sub-varieties: *Gold Spangled; Silver Spangled; White-crested Black; White; Chamois, or Buff.*

For external beauty there is no variety of fowl which can excel the Polish, and it has other peculiarities, notably that of the skull formation, which commanded careful attention from the great naturalist Darwin. It is beautiful in colour, handsome in shape, and with fine carriage, the head being surmounted by a large globular crest. On the Continent, more especially in France, it is very largely bred, and were it not for one special point, namely, the crest, which is so difficult to keep in order, and if allowed to get wet brings on colds and other diseases, there is little doubt but that the breed would be a popular one in England, for, apart from the handsome, rich appearance of these fowls, they are capital layers, good on the table, and bear confinement very well. There can be no question that when a breed combines good looks with economic qualities it has a very great advantage over any other possessing only one of these recommendations. The name would indicate that these fowls had their origin in Poland, but this is an error, and the name is evidently a misnomer. It has been suggested that the title comes from the crest, which in some districts is called a "Poll," and considering how many of our English words and names have undergone a change, it is not improbable that at first Polish were called Polls, then Poll'd fowls, and afterwards Poland fowls. To any one who has a suitable

place and wishes to take up with a handsome fowl, there is none better than the Polish. It will exercise the skill and knowledge of the most ardent fancier, and if he produces really good specimens he will be rewarded, for these always realise good prices. It is highly ornamental, and one or other of the varieties can be made to match with the surroundings of a poultry yard. Thus economic and æsthetic tastes can both be satisfied, and this is always a point in favour of any breed of fowl.

SPANGLED. Of these there are two colours, the Golds and Silvers. In the former the ground colour in both the sexes is a golden brown or red, with nearly every feather edged or laced with black, which gives a fine spangled appearance, the markings being half moon or crescent-shaped all over. Silvers have a ground colour of silver or white, with the same markings as in Golds, but the effect is not, of course, so rich.

WHITE-CRESTED BLACKS. Sometimes these are known as the Dutch fowls, and they were probably perfected in Holland. In fact, the Continental name for them is "Hollandais." In these all the body and tail is of a rich metallic black hue, but the crest is white, or nearly so, for it is difficult to maintain two such extremes in colour. They are remarkably handsome. It has been stated that at one time Black-crested White Polish were seen, but though we have diligently sought them, we have never yet found a pair. White Polish are occasionally to be met with.

CHAMOIS. These are of two kinds, in one of which the colour is almost entirely buff, and in the other buff with lacing of a lighter shade. The latter are much the better, and when evenly marked look very pretty.

Blacks, Cuckoos, Greys, and Blues are all to be seen, but they are not bred to any extent.

MEDITERRANEAN.

Races: *Andalusian; Leghorn; Minorca; Spanish.*

Amongst the most valuable races of fowls are those which come under the generic term given above, and embrace several breeds, namely, Andalusians, Leghorns, Minorcas, and Spanish, all of which have originated either in Spain or Northern Italy. They are non-sitters, that is, in them the maternal instinct has been suspended, and they are amongst our best egg producers. The type is more or less uniform throughout, with, however, some minor variations apart from colour of plumage. They have large single combs, upright in the cocks and falling over in the hens; long fine wattles; clean face; long, arched neck with flowing hackle; broad, long body, tapering to tail, and full breast; full tail, with long sickles in cocks; medium length of legs; and an upright, graceful carriage. As these are amongst our most valuable egg producers it is necessary to deal with them at length.

ANDALUSIANS. This breed is one of the least known, but it is certainly not one of the least valuable of the Mediterranean family. In some parts of this country there are what are known as the "Blue" Spanish, and these are very nearly allied to the Andalusians of the present day. There are also birds known as the White Spanish, but the latter are either sports from the Blues, or White Minorcas. Andalusians are heavy layers of large white eggs, are hardy, and either in a suburban garden or on a farm thrive equally well. The colour of the best specimens is—breast deep blue, and the rest of the plumage a deep slate blue with a lacing of darker colour, save in the cock, when the hackle, saddle, and sickle

should be of a rich glossy black or deep purple. These characteristics, with dark horn beak, the bright orange or red eye, red face, comb and wattles, neat white ear-lobe, and dark leaden-blue legs, make the variety very pleasing in appearance. Andalusians are essentially a laying variety, and in this respect equal to the best of the Spanish family, are unsurpassed by any other as layers. They lay large eggs, perhaps scarcely so large as the Black Spanish, but not much less, and the number of eggs produced is very great, often reaching 150 to 180 per year, if a good kind is kept, but they do not thrive on a damp place.

LEGHORNS.—Sub-varieties: *White; Brown; Black; Buff; Pile; Duckwing; Mottle; Cuckoo.*

For the last twenty years Leghorns, or "Italiens," as they are called on the Continent to designate the country of their origin, have been amongst the most valued of our domestic poultry, and their popularity in all parts of the world is a striking proof of their merits. They were first made known by way of America, where they have held the premier position in spite of many rivals. At first only Whites and Browns were known, but the other colours named above have been introduced, some from Italy itself, but the majority of instances by cross breeding from these two colours.

WHITES. This colour deserves the foremost place as being decidedly the best of all the Leghorns. They are pure white in plumage, with bright red combs, wattles and face, a white ear-lobe, or deaf ear, and yellow legs and feet. They are most prolific layers, giving medium-sized, white-shelled eggs, and are very hardy indeed. Their great activity of body, and excellent

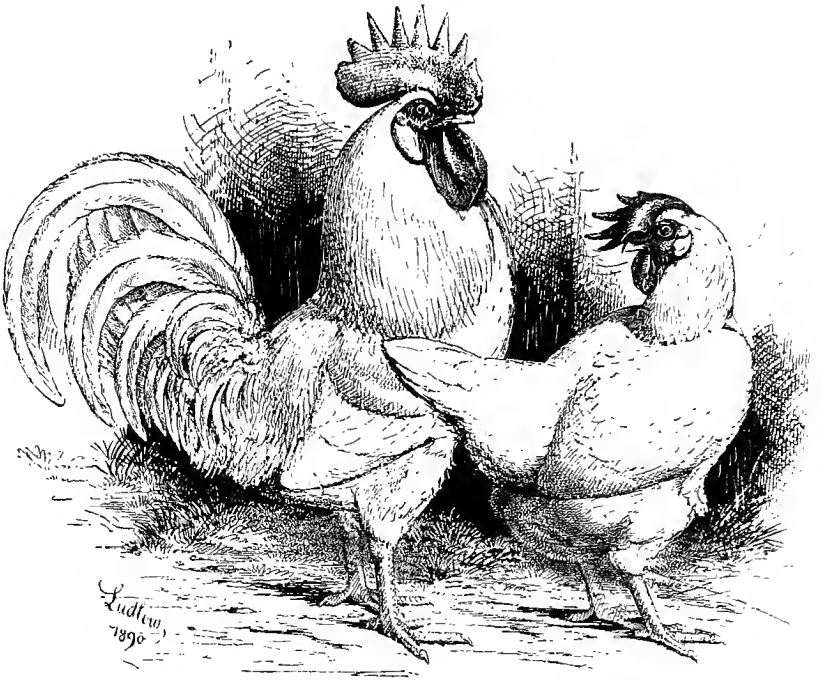

Fig. 24. White Leghorns.

foraging qualities enable them to withstand cold, and we have abundant testimony from all parts of the country that they are amongst the hardiest of our non-sitting breeds, thriving equally well on high and low-lying lands. As table fowls they do not take a high place, the flesh being sparse, and yellowish in colour. For crossing purposes they are equally valuable, and we advocate them as being the best egg producers at present known to us, taking size of egg and stamina into consideration.

Browns. At one time Brown Leghorns were equal favourites with Whites, giving as large an egg, and having an even heavier frame than Whites. But some years ago, in order to secure greater brilliancy of feather, a dash of Black Red Game blood was introduced, and whilst securing that result, has been injurious in other ways. Probably ere long the effect will pass away, but it still partially remains. They have plumage in nearly all respects similar to Black-breasted Red Game, and are very pretty indeed, the young chickens being especially pleasing.

Other Colours. These need not detain us long. At present Buffs and Duckwings are best, but they require much to bring them into first-rate form, and they are uncertain in breeding. We believe that when the colour has been fixed Buff Leghorns will be amongst our most popular breeds, but we hope that in striving after this point the undoubted economic qualities of the variety may not be injured.

Minorcas. Sub-varieties: *Black; White.*

The Minorca has during the past fifteen years won a very prominent position, and taking the number and weight of eggs, it is probably the most prolific fowl we have. It lays large, white-shelled eggs, and hens of this

variety in their first year often average 170 and 180 eggs. The origin was doubtless from the same stock as the Black Spanish, and in some places it is known as the "Red-faced Spanish," but the former has been bred for a white face and this has had an injurious effect. Minorcas are fairly hardy, but they certainly thrive best in mild positions, and being less active in habit of body than the Leghorn cannot bear cold so well. They are full bodied, fair upon the table, and very handsome indeed, the Blacks being decidedly the prettier. Of late there has been a greater tendency than before to white on the face, and this most objectionable feature should be rigorously kept down. There has also been a leaning to excessive size in comb, which should be avoided.

Blacks. These are entirely black in plumage, a glossy green, lustrous black, with legs black or very dark slate. The beak is dark horn colour, and we like this breed with medium length of legs. Black Minorcas can bear confinement fairly well, but, like all other fowls, thrive best when they are at liberty. They are especially suited to amateurs who live in a sheltered position, and desire an abundance of eggs.

Whites are in character identical with Blacks, but have pure white legs and feet and white beak. The plumage should be glossy white. They are, however, regarded as less hardy than darks, but are equally good layers. Few Whites are to be met with, and of these we fear that some are not pure, as they had almost become extinct.

Black Spanish. "How are the mighty fallen," may be said with regard to the Black Spanish fowl. At one time it stood almost the peer amongst all varieties of domestic poultry. Mr. Lythall, late secretary of the Birmingham Agricultural Society, has told how somewhere about thirty

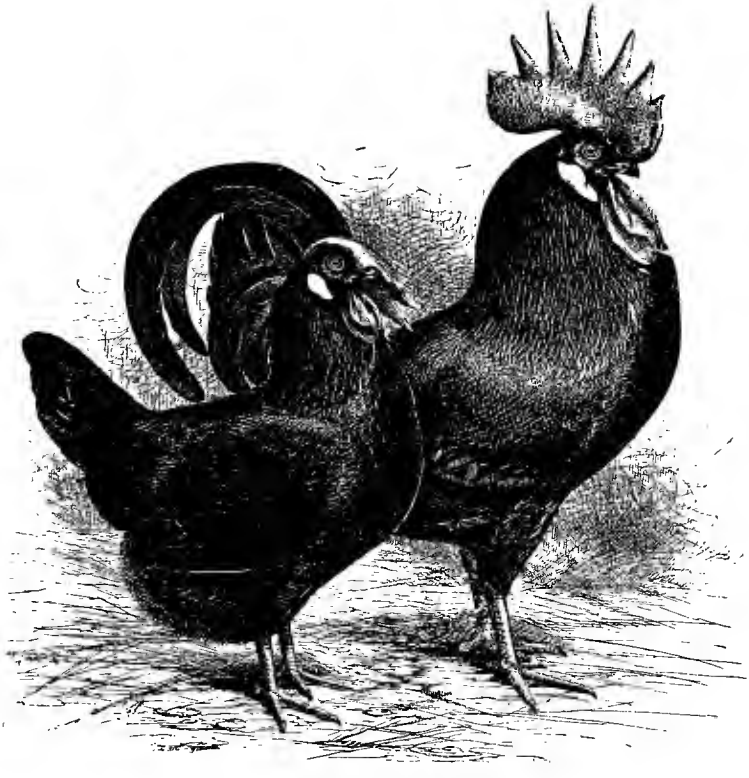

Fig. 25. Black Minorcas.

years ago there were upwards of three hundred specimens of this variety shown at one exhibition of his society. Now they seldom reach a dozen in ordinary shows, and twenty-five is regarded as a very good number even for big gatherings. The reasons for this falling off are not difficult to find. That they are exceptionally good as layers is well known, and this is a quality they still retain. Weight for weight we should not think that any other breed can touch the Black Spanish, as they are both prolific and produce a large egg. But their extreme delicacy and the ragged appearance they have when more than a few months old put them out of court entirely for practical purposes. I have seen both adult fowls and chickens running about almost denuded of feathers, and they are both slow in feathering at first and in getting the new plumage during the moult.

The blame for this state of things must be laid at the door of an excessive development of white on the face, which is undoubtedly the most prominent feature of the Black Spanish. This kid-like substance hangs down on the best specimens for several inches, and is often very beautiful in its texture, smooth as a lady's glove. To secure it in perfection everything else has been sacrificed, and show specimens are kept in an artificial hot-house state, which has naturally resulted in enfeeblement of the system. That the present-day Spanish, as seen in this country, are remarkable examples of the breeder's art is unquestioned, but they are of no real value for practical purposes. This is to be regretted, as their marvellous laying powers might have proved of the highest service. There is another matter in connection with the exhibition of Spanish which must be mentioned, namely, trimming of the face. Good specimens seen at shows have beautifully clean faces,

free from hairs or small feathers. This is unnatural, for if left alone the white kid on the face will have more or less of hair-like feathers. These are, however, all plucked out, and it is the strong objection which many have to exhibit birds so trimmed, especially in face of the universal rule against trimming in rules of all shows, that has depopularised the variety. Of course, as the system is well known and more or less recognised, there can be no charge of fraud in the matter, but it is an evil system which awards prizes to the skill of the trimmer rather than to that of the breeder. It is only fair to say that the white face on the Spanish is by no means a new feature, for it has been characteristic ever since the time we can trace any distinct record.

RUSSIANS.

Information as to the varieties of fowls kept in Russia is very limited indeed, but there is a breed, bred to some extent in the United States of America, which is called by this name. They have glossy green black plumage, the feathering being very profuse, more especially about the neck. The body and breast are full and deep, the skin being yellow, which rather points to American production. The comb is sometimes rose, and at other partaking of a double shape, but is largely hidden by the beard. They are of medium size and said to be very hardy and good layers.

CHAPTER XIII.

ASIATIC BREEDS OF POULTRY.

Brahmas—Cochins—Langshans—Malays—Aseels—Yokohamas.

Asia is the original home of fowls, and to that continent we owe this and several other of our domestic animals. It is generally conceded that nearly all our varieties of poultry have descended from the jungle fowl of India, the Gallus Bankiva or Soneratii. This was the view taken by Darwin, but later observations have led naturalists to the conclusion that there must have been a more remote ancestor, and that some, at least, of our fowls have come through other branches.

The term "Asiatic" is not given to all fowls which come to us from that country, for we have many kinds of Bantams and peculiar forms, but, as a rule, to the larger and feather-legged breeds. I have placed in this chapter Malays, Aseels, and Yokohamas, as well as Brahmas, Cochins, and Langshans, leaving the smaller races to be dealt with in that devoted to Bantams.

BRAHMAS.

Sub-varieties: *Dark; Light.*

It is generally acknowledged that the Brahma was a cross, or manufactured, breed, and probably more lies

have been told respecting it than any other fowl. But testimony has shown that in India there exist fowls similar in all respects to the original birds—those shown twenty-five or thirty years ago—where they are termed Chittagongs, the name under which they were first known in England and America. This refers to the light variety, and when dark birds were first bred, as they probably were obtained from a sport or by crossing, they were called "Burram pooters," afterwards to be altered to "Brahma Pootra," the latter half of which is generally dropped now, and hence we know them commonly as Brahmas, though there are old-fashioned people and schedulers who still retain the former title. Another term used was that of Shanghais, and those who adopted it stated that the bird they owned came from the Chinese port of Shanghai; but all these things have died down, and the Brahma has taken its position. As a rule adult cocks weigh about 12 lb., and hens 2 lb. less, whilst it is not difficult to obtain cockerels at six months up to from 7 lb. to 9 lb., and pullets 6 lb. to 8 lb. At times larger birds have been seen, but those recorded are good weights. The head is very small in proportion to the body, short and fine in its lines, and surmounted by what is known as a pea comb, which may be briefly described as a triple comb, the three small ridges running side by side, with the centre one rather higher than the other two, but not more than half an inch in height. The neck, in the cock especially, is very full in the hackle, and has a fine arched appearance, so that the head is forward, just in advance of the breast. The back of the Brahma is wide and flat, what there is seen of it, but from the neck hackle, where the feathers join the shoulders, to the root of the tail, the latter covered by what is known as the saddle

hackle, the distance ought to be short, and have somewhat the appearance of a U, though the upper part of the letter does not adequately represent the true form. The tail is different from that of all other fowls, except such as are of the Asiatic type, and may be described as a bunch of short feathers but with a slight curve at the end, the whole rising straight, or almost straight, up from the body. The thighs are covered with soft fluff, and fairly profuse, below which stand out the hocks, or soft feathers which protrude below the thighs. With these come the leg and foot feathers, which, in first-class exhibition birds, are produced as long as possible, in some cases standing out several inches from the middle of the foot. The more foot feather that can be obtained from an exhibition point of view, the better; but for ordinary purposes this is a matter which need not be so much regarded.

DARK. Both cocks and hens in the dark variety have yellow beaks, or yellow with a black stripe; the eye is red, and the comb, face, deaf ears, and wattles are of the same colour, though of a more pronounced hue. In the cock the head may be described as silver white; the hackle white with a heavy stripe of black, and saddle of the same colour. The back and shoulders should be silver white, except between the shoulders, where the black must be laced with white. The upper wing butts are black, the wing bow is white, and the end of every wing feather is black. The breast, the under-parts, and the thighs should be glossy black. The tail is pure black, glossed green, and the legs orange. In the hen the head and hackles are silver white with a deep black stripe. The tail is black, and the top feathers edged with grey, and the rest silver grey, dull steel, or steel. The markings or pencillings in each feather is in crescent form, and is black, pencilled with grey.

LIGHT. The differences in this variety are entirely in plumage. In the cock the head is silver white, the hackles, both neck and saddle, white with a black stripe. the tail and coverts are a glossy green black, whilst the body has a peculiarly soft pearly whiteness. The shank feathers are white, but more or less mottled with black. In the hen the head is also silver white, and the hackles white with a deep black stripe. The tail is black, except the top pair of feathers, which should be edged with white, and the body pure white all over.

COCHINS.

Sub-varieties: *Buff, or Cinnamon; Partridge; White; Black; Cuckoo.*

About forty years ago, as some readers may probably remember, the Cochin China fowl created quite a sensation in this country, and was the mania of the day. It was vaunted to the skies as the best, the most prolific, the handsomest bird that was ever seen. To possess a pen of these fowls meant fortune, so it was said. The hens would lay several eggs a day, of the richest colour and flavour; and fabulous prices—fabulous even when compared with prices now realised for first-class exhibition birds—were given for specimens. Fifty pounds for a cock, or five pounds for a sitting of eggs was no uncommon price. Poultry shows were then the resort of fashionable folk, and crowds thronged them, struggling almost for the right to be there. But it was not long before the bubble burst, and the much-vaunted merits of the fowl were found to exist only in the imagination of those who puffed up the breed. The whim of fashionable society passed away; poultry shows became comparatively deserted; the mania died out in course of time.

It seems strange that this mania should have been respecting a breed which has so little to recommend it from an economic point of view. It cannot be claimed as a good layer. The eggs, it is true, are very rich in flavour, with a high colour, which always makes them popular, but they are small compared with the size of the hen, running about nine to the pound. Cochins are most indefatigable sitters. As soon as they have produced a dozen eggs they want to sit, and whilst this quality is very useful at times, it is very annoying at other seasons. Cochins have certainly the merit of laying well in winter, due probably to their profuse feathering, which prevents undue evaporation of heat. Young chickens are fairly good on the table, but when older they cannot be regarded as even passable in that respect. The flesh is at all times very yellow, and more largely developed on the thighs than the breast. This is due to the fact that Cochins are not flyers; they have only small wings, whilst very large ones would be needed to support such a heavy frame. The weight which Cochins attain is very good indeed. Adult cocks range from 12 lb. to 15 lb., hens 8 lb. to 11 lb., and cockerels and pullets 2 lb. to 3 lb. less. They are very hardy, and can stand almost any place and soil, but they do best on short, level grass, for the foot feather is broken and spoiled when on long grass or rough ground.

Buff. This colour stands first among Cochins, and are certainly very handsome indeed. They have been brought to a wonderful state of perfection. The plumage is any shade of buff, from light lemon to rich cinnamon, and a great point is to secure uniformity of colour throughout.

Partridge. Here we have greater variety and

brilliancy of colour, the admixture in parts of glossy metallic black, rich dark red, bay and orange giving a very striking effect. The breast, coverts, wing butt, under-parts, tail and leg feathers are black, and the saddle and hackle golden red or orange. This refers to cocks, and the hens are equally effective, as the light brown plumage is distinctly pencilled with a darker shade.

Other Colours. White, black, and cuckoo are simply self colours in the two former, and a bluish-grey ground with darker grey or blue bars in the last named. Occasionally splendid whites and blacks have been seen, but they are only bred to a limited extent.

LANGSHANS.

It is a fact that few breeds have had to suffer more at the hands of friends and foes than the Langshan, but its intrinsic merits have won for it the position it holds in spite of much opposition, and we have not yet come across any one who has fairly tried it that does not speak in its favour—that is, if they have the true breed.

Chinese in its origin, the testimony received from the Celestial Empire shows that the Langshan there is regarded with great favour, if not actual veneration, in the districts where it is bred. It is a scarce breed, nor is it found in all parts of China. Hence the reason why some travellers have declared that such a breed does not exist. Black Cochins are found in the southern parts of the land, especially in the district of which Shanghai is the port, and thence this last-named variety of Asiatics has at times been imported. It is probably the case that those who have seen the Black Cochins there have concluded Langshans were the same, never having heard

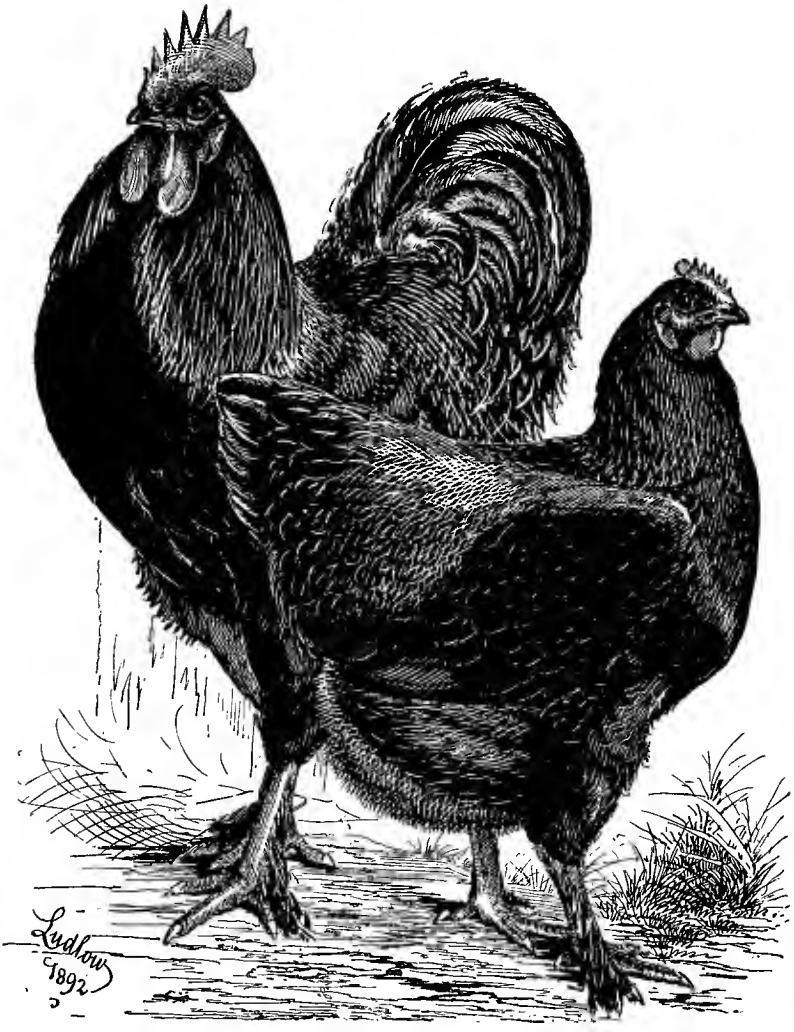

FIG. 26. LANGSHANS.

Bred by and the property of Rev. G. T. Laycock, Terwick Rectory, Petersfield.
Winners of many Prizes.

of the latter. Some years ago, when the Langshan first arrived in this country, it was put down at once by many to be simply a Black Cochin, and was even exhibited as such. We think it not at all improbable that in China the crossing of this variety with some of the Cochin tribe has produced the Black Cochin, or that some of the Black Cochins, so called, imported a generation ago, were actually Langshans. If the latter supposition be true, it is not difficult to believe that, with the mania then existing for the Cochin type, the distinctive qualities would soon be abolished, and, save for the one of colour, the variety be brought to the dead level of what was known as the China fowl. This seems a not improbable explanation; but that there is now a great difference between the Black Cochin and the Langshan no one can question who knows anything about them. The former has yellow legs and feet, which are profusely feathered; it is a bird of abundant feather, with a bony but not fleshy frame; the meat is dry and yellow, and it is a poor layer. On the other hand, the Langshan has black legs and feet, which are only slightly feathered; it has a close-feathered body, with light bones in proportion to its size, and well covered with meat, which is rich, tender, and white; and it is a capital layer for an all-round fowl, producing eggs abundantly in winter, and these are not only rich in flavour, but deeply tinted in shell, and greatly preferred. The contour is vastly different in the two breeds to the eyes of any student of ornithology. The habits, too, are entirely opposite.

As the Langshan fowl is a bird of considerable merit for culinary purposes, its size is necessarily a chief consideration, and an adult bird should weigh not less than 10 lb. The bird should be sufficiently long on the leg to give a graceful carriage to the body; the head should

be small for the size of the bird, full over the eye, and carried well back, with full, flowing hackle; the shoulders wide; the breast long and meaty; and the tail fan-shaped and carried rather high, with abundance of glossy side-hangers, and having two sickle feathers projecting six inches or more beyond the rest. The general bearing should be that of an active, intelligent bird. The comb is single and the plumage a dense black throughout, with brilliant beetle-green gloss upon it.

MALAYS.

The breed of domestic poultry most nearly resembling the Gallus Bankiva, which is thought to be the ancestor of our domestic breeds of poultry, is the Malay. It is also very similar to the indigenous fowl of India, which it resembles in many characteristics. It is very many years since it was first imported into England, and there is mention made of it in books fifty years old as a breed then well known. It of course derives its name from the Malay Peninsula, whence it was first brought over to England. It has never reached the position of a favourite fowl, but there have always been a number of breeders who have stood by it. The reasons for this want of popularity are not far to seek. The appearance of the bird is so much against it, and its pugilistic proclivities have made it a bird very difficult to keep in large numbers. It is also a poor layer, and this lack has not been made up by any especial suitability for table purposes. It is very true that the flesh is good in flavour, though a little strong, and wonderfully abundant, considering the appearance of the fowl, but heavy yellow shanks are not a recommendation upon the poulterer's stall. These considera-

tions have all combined to keep the breed in the background, and we question whether under any circumstances it is likely to become a popular variety. But the breed has its admirable points, and it is a satisfaction to know that it has been maintained pure through all these years.

ASEELS.

This name has been given to a breed of poultry introduced from India some time ago, the meaning of which is "well-bred," "genuine," or "noble." They are found of all colours, and are very keen fighters; but the kind most favoured in this country are white. Mr. Montressor, a leading breeder, says that instead of having a long snake head and beak, a thin neck covered with silky feathers that he can throw back as a young lady does her curls, profuse plumage, soft, broad-spreading tail—in fact, everything that would go to pieces in an hour's encounter—he is possessed of exactly the reverse attributes; in short, he is adapted for nothing else but the combat. His neck, strong and muscular, is almost devoid of flesh; his beak, strong and slightly curved; his eye, like that of an eagle; his comb, small, without wattles or ear-lobes; his back, broad, with a fine, close tail, consisting of pointed feathers set on and carried low, the root being stout and full of muscle; his wings set well apart from his body, and the whole frame of the bird feeling in hand as if made of wood, whalebone, and whipcord. These birds are very quarrelsome, and on that account are scarcely to be recommended for ordinary purposes.

YOKOHAMAS, OR PHŒNIX FOWLS.

Some very strange forms of animals and birds have come to us from the far East, but one of the most pleasing is that known under the above terms, though they are also sometimes called Japanese Long-tailed. Their peculiarity is in respect to their tails, which grow to a great length, and it has been recorded that they have been known to reach 17 feet. We have seen a sickle feather 14 feet in length. They only moult once in three years, and in order to preserve the tail special precautions have to be taken, and they are kept upon high perches, whence they are lifted down at certain times for feeding. They are very handsome, but the tails require considerable and regular attention, and hence they have never become at all popular, though at nearly all leading shows specimens may be met with.

CHAPTER XIV.

AMERICAN BREEDS OF POULTRY.

Dominiques—Javas—Plymouth Rocks—Wyandottes.

The great development of poultry keeping in America has naturally led to the formation of several new breeds, owing their special characteristics to that continent. As yet the number of these is limited, for we have only four varieties which can be given a definite place, but others are in process of evolution, and will doubtless be perfected within a few years. It is, however, to be noted that we owe several breeds included in other classes to the enterprise, if not origination, of American fanciers. These are, notably, the Brahma in days gone by, and the Leghorn in more recent years. In each of these instances the variety was introduced to Britain by way of America.

The purely American fowl has an individuality of its own—namely, large frame, much of the Asiatic type, with yellow flesh and clean legs. They are all good winter layers, and make fair table fowls. In America yellow-fleshed birds are thought to be finer in flavour, and are greatly in demand as broilers.

DOMINIQUES.

There is an old American breed called the Dominique, of which a few have been imported into this country, but they have never become popular. They are said to have been taken over to America by the early Puritans, but what there is in support of this statement we have not been able to learn. A recent American writer says they are the oldest of the diminutive American breeds, being mentioned in the earliest poultry books as an indigenous and valuable variety. They weigh from 6 lb. to 8 lb. when fully matured. They are excellent layers, very hardy, unexceptional as mothers, and are good on the table. They grow both fat and feathers quickly, while their plain "home-spun" suits make them very suitable for countless localities where large and more valuable-looking fowls would be liable to be stolen. The merits of this breed will recommend it to persons residing in the country as well worthy of promotion in the poultry yard, whether as producers of eggs or of meat, as sitters or nurses.

The colour of the plumage may be described as a light or steel ground, with each feather distinctly striped or barred across with a darker or bluish grey, the bars shading off gradually from dark into light. The cock is a very showy bird, with full saddle and hackle, and abundant, well-curved feathers. The comb should be a neat rose, with face, wattles, and ear-lobes red; wattles neat, well-rounded, and of medium size; legs bright yellow.

JAVAS.

As to the origin of this fowl there is considerable difference of opinion. There are those who state that

the Java is a perfectly pure breed imported from Asia, but this contention does not appear to be supported by sufficient evidence, and it is most probable that it is the result of some unintentional or intentional cross which has been perpetuated. The Black Java is by no means a new breed in America, for it has been bred there for many years, but, strange to say, it has only been brought over here during the last decade. It is supposed to have been one of the breeds used in the formation of the Plymouth Rock, and thus it seems as though the child had taken the place of the parent. If it had been the means of producing the Plymouth Rock and then had died it would have done a work deserving of recognition.

In shape the Black Javas are something like the Plymouth Rock, but having less of the Cochin type. They are said to be better layers, but of this we are unable to speak from personal experience. They do not look quite so big, but this is more from the closer feathering of the Javas. They are good on the table, and in America are said to be well liked as market fowls. In plumage the Black Java is of a brilliant metallic black, with black beak, and almost black legs. The eyes are brown and mild, the comb red, single and evenly separated, while the wattles and lobes are red. The tail of the cock is ornamented with long and graceful sickle feathers; the breast is deep and full, the body broad, long and deep, giving the bird a compact appearance. The thighs are strong and covered with soft fluff, and the bottoms of the feet are yellow, the shanks being clean, without feathering, and, although black, approach willow as age comes on. The weight of the cock is about 10 lb., and the hen 8 lb.; cockerels weigh 8 lb., and pullets about 6½ lb.

There is another variety of the Java fowl known as

the Mottled Java. These only differ from the Blacks in that their plumage is black and white intermixed. In all other respects they are identically the same.

PLYMOUTH ROCKS.

Sub-varieties: *Barred; Black; White.*

It is now somewhere about fifteen years ago since the Plymouth Rock first made its appearance in England, and within that short space of time it has advanced so rapidly that it occupies a most prominent place amongst economic breeds. Few who saw it at first thought that it would ever reach the popularity it has attained, but its undoubted merits have won for it a host of friends, and many of those who at first scoffed at it have become its most devoted admirers. Of course, there is nothing succeeds like success, and enthusiasm is always contagious; moreover it is certain that English breeders at least are attracted by any breed which offers many difficulties in the way of perfection. They like to have something to strive for, something that is only attained after many years and with the greatest difficulty. This has probably had something to do with the large number of breeders who have taken up this breed. Perhaps, also, there is a lingering liking for the Asiatic type of fowl, one that has no special individual quality but is a good, useful bird all round. So far as the adaptability of the Plymouth Rock to the needs and conditions of the country, little need be said, for it has fitted itself most wonderfully to these in every way. It is well known that all forms of animal and vegetable life become more useful and powerful when removed from their original conditions to others. Darwin has shown very clearly a

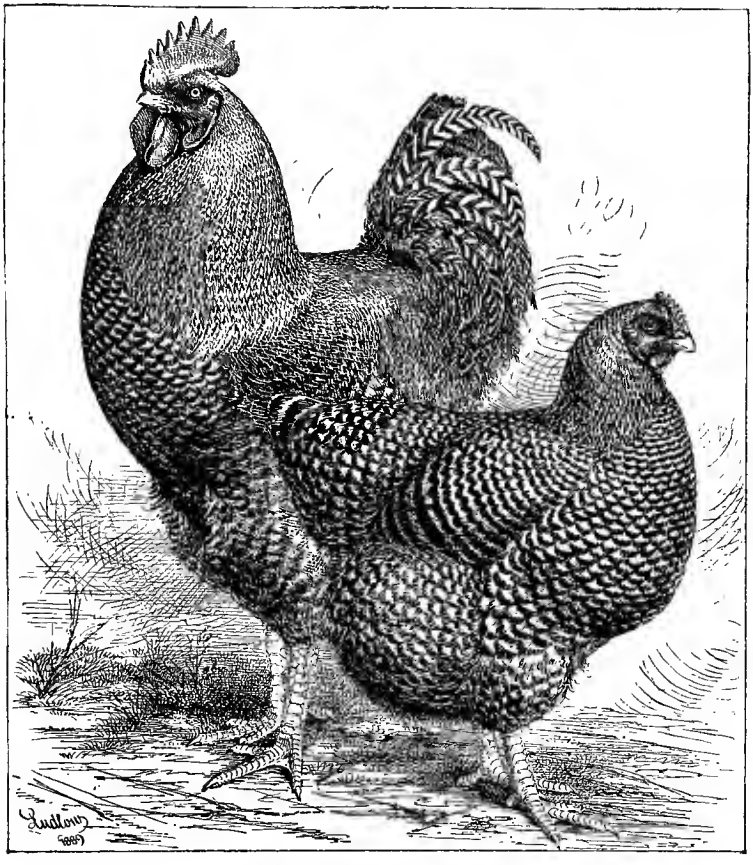

FIG. 27. PLYMOUTH ROCKS.

multitude of examples of this law of nature, and even within the limited radius of the poultry yard we have constantly further examples in support. Some time ago we were speaking with a breeder in Ireland who has tried several varieties, and she told us that the Plymouth Rock is the best of all for her purpose, in that it is an excellent layer during the winter, and the chickens are sooner ready for market than any other breed she has known. Its hardiness makes it suitable for nearly every place where fowls can be kept with any degree of success, whilst its "homely" garb saves it from the variations of plumage which are found in other breeds. Of course there is the old complaint that a breeder has to produce a hundred chickens in order to secure decently marked birds. This, we think, will always be more or less the case with any breed whose markings are "cuckoo." But as years go on there will undoubtedly be greater certainty in marking. The bad-coloured birds are perhaps those which have done more to spread the influence of the Rock throughout the country, for the breeder is willing to sell them at a small advance upon killing prices, and they are quite as good for all practical purposes. If the proportion we have named be anything like the true one the number produced must be enormous.

The difficulties of breeders have been considerably increased by variation in the colour produced, but the attempt to divide the Rocks into dark, light, and medium shades, has been in vain, nor is there any appearance of its becoming a pressing question for some time. That there are different shades which could be divided in the way named is an accepted fact, but these differences are not sufficient to justify the giving of separate places to them, or their recog-

nition as distinct varieties. Between light and dark Brahmas there is a distinct difference, and also between the varieties of Cochins, Hamburghs, Game, &c., these differences not being merely shades of the same colour. And there have not been structural differences which have warranted any distinction. Some years ago an American breeder warned English breeders against the Cochin type of the Rock, but this is really needless, for though an amount of soft feathers may be found on some Plymouth Rocks, as upon members of other varieties of poultry, there is nothing like an approach to the Cochin type. Were the Rocks feather-legged there might be some danger of this tendency being seen, but at present I am not aware that there is the slightest trend in that direction. The Plymouth Rock is a big fowl, very hardy, and makes a first-rate sitter and mother.

WYANDOTTES.

Sub-varieties: *Silver; Gold; White.*

This recent introduction from across the Atlantic has made wonderful strides in public favour, and meeting, as it does, a direct need at the present time, there is every probability of the breed securing a permanent position. The need is for winter layers. Since the question of home supply for the egg market has been raised, it has been found that there must be a constant supply in the winter, which cannot be fully met by non-sitting varieties. As is well known, large quantities of eggs come to this country from France, and in order to keep up the supply Asiatic fowls have been introduced there, and now we have tinted-shelled eggs from a country where at one time nothing but white-shelled eggs were known. This example must

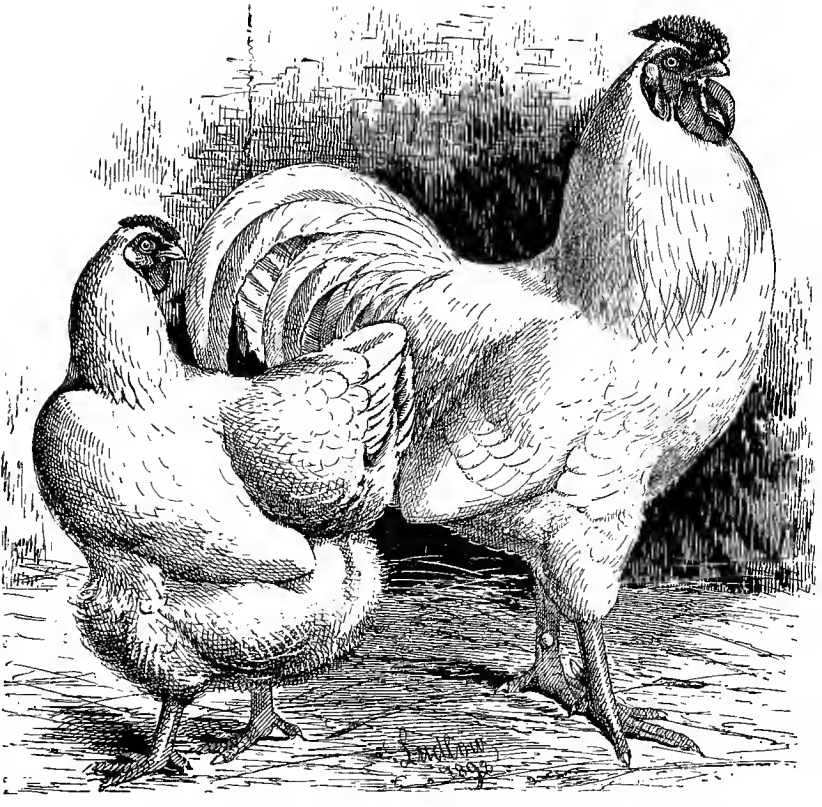

FIG. 28. WHITE WYANDOTTES.

The property of Rev. G. T. Laycock, Terwick Rectory, Petersfield.

First and Special at New York for the best breeding pen, also Special for the most typical female, at Charleston, S.C. The Cockerel won First and the Pullet First, also Special for the best male and female.

be followed if breeders on this side are to meet home demands, and hence the desire for breeds which are, above all, winter layers. At the present time there is a steady and increasing demand for Plymouth Rocks, Langshans, and Wyandottes especially, and for all the Asiatic type of fowl generally.

In addition to the undoubted economic merits of the Wyandotte which have won it favour with one section of the community, the great recommendation to fanciers is that there is plenty of room for improvement; that is, the external qualities are by no means perfect. No one can go down the Wyandotte classes—we are now speaking of Silvers and Golds, for Whites being self-coloured do not present the same difficulty—without feeling that the ideal is a long way from being reached, both in markings and colour. When this is the state of things, and the breed is worth anything, it is sure to command support. Certainly this is the case with the Wyandotte, and we think that it offers to breeders ten years' good working in order to secure that perfection of markings and colour which is evidently intended.

The special peculiarities of the Wyandottes are, that it carries a neat rose comb, red face and wattles, is of the Brahma shape, and in the laced varieties each feather on the hen (except the hackles and tail), and on the breast of the cock is edged or laced with black, the centre being white in Silvers and bay in Golds. The effect is very pleasing indeed, and Golds are especially beautiful when well marked.

CHAPTER XV.

UNCLASSIFIED BREEDS OF POULTRY.

Frizzles—Naked Necks—Rumpless—Silkies—Sultans.

There are not many varieties of fowls of the larger varieties which remain to be dealt with, but a few now need our attention. As a rule they are breeds which have some peculiarities, and thus recommend themselves specially to those who prefer quaintness, or out-of-commonness. We could not place them in any of the previous chapters, because in more than one case their origin cannot be traced to any country.

FRIZZLES.

This term is given to birds on which the feathers are all turned the wrong way, giving them a very strange aspect. Some very pretty birds, if this peculiarity has any beauty at all, are occasionally to be seen, more especially in whites. Colour, however, is not regarded as of importance, the evenness of the frizzles being of much greater consequence. As a rule they are small in body, though larger than Bantams, and being very tame are most suitable for pets. No one would keep them by reason of their economic qualities, and they are

bred entirely for fancy or exhibition. They can be kept in a very small place, and some of the best Frizzles we have seen were bred and kept in a London back garden, if a space 12 yards square can be so called. They are somewhat delicate, as a result of in-breeding to fix the frizzles. Frizzled fowls are to be met with in various countries, and we recently learnt that in one district of China they are by no means uncommon.

NAKED NECKS.

It is generally considered that these peculiar-looking fowls, whose heads and necks are almost entirely denuded of feathers, come from Transylvania, in south-eastern Europe, but whether they are merely sports or at all extensively to be met with in that region our present information does not state. They are to be found in Britain only now and again, for the peculiarity is not one to recommend itself, and they have a somewhat repulsive appearance, as if the unfortunate fowl had been dipping head and neck into hot water, losing its feathers as a punishment. They are said to be fairly good layers and passable on the table.

RUMPLESS.

In these fowls there is no tail, and the loose feathers known as the saddle hackle fall over the stern, which thus has a very abbreviated appearance. Fowls of this kind are to be met with in several places, and are both large and small in size, as well as of various colours. At one time they were common in the island of Arran, off the west coast of Scotland, and thence we have seen specimens in all respects save that of tail identical with the

Brown Leghorn, so far as the cock is concerned, the hens being much dingier in hue. We have no information as to the cause of this peculiar loss of tail, and it is scarcely to be expected that these birds will become popular. There will ever be people who prefer strange types, and to them must be left the production and perpetuation of sports and variations of this kind.

SILKIES.

Of the many quaint varieties of poultry the Silkie takes a leading place, both on account of its antiquity and the peculiarities which separate it from other breeds. The leading difference is that which gives to it the name it bears, namely, the fact of its feathers being more like fine hair than is usual for plumage on all kinds of birds. This peculiarity is occasionally met with in other breeds of poultry, but only as a sport, and this is the case more especially in what are termed soft-feathered breeds, such as Cochins and other Asiatics. The appearance is very peculiar, and the bird looks as if it were covered with fur instead of feathers.

A further peculiarity is seen in the colour of the skin and flesh, which is of a deep violet, almost black, whilst the face, comb, and wattles, are of a deep blue or purple colour, with legs and feet bluish black. It is the only fowl which has colour of flesh or skin of this kind, for one of which we have heard in Ceylon is probably of the same family, and when cooked there is no less tempting bird to be seen. Looks no more make the fowl than the coat does the man, and the flavour of the flesh is excellent. The white, silky feathers, relieved by dark purple flesh, makes the fowl look like an old negro with white whiskers, and this explains why it is called "Negres," or Negro fowl, on the continent of Europe.

As to the origin of the fowl there is very little information. It is sometimes called the "Japanese Silky," but whether we owe it to that country or not it is difficult to say. It has been known for hundreds of years in Europe, and is mentioned by some of the early writers on domestic fowls. Even Darwin throws no light whatever on the question of its origin, and we are perforce to leave it to future investigators. At one time there were several breeders of this fowl, but the number has greatly diminished, and we see very few specimens even at the principal shows. Yet they have strong economic qualities. One of the oldest breeders, the Rev. R. S. Woodgate, thus wrote respecting them in the *Fanciers' Gazette* some time ago:—"Japanese Silkies are a very excellent variety, of good service as winter layers, and having hardy constitutions will live and do well in any small pen in a garden or yard, while as mothers or nurses of Bantams, pheasants, or the more fragile breeds of poultry, they simply stand unrivalled. For exhibition, Silkies should be quite white, have a nice round globular crest, are five-clawed, feather-legged, but without any trace of hocks. They should have small, round, knobby combs, black or purple, turquoise blue ear-lobes, and be as free from long sickle feathers as possible. They are of moderate size, and shaped as much as possible like a good Cochin, and with the plumage as silky as can be obtained."

SULTANS.

Of the minor breeds of poultry there is none more beautiful than the Sultan, but from a difficulty to keep it in good plumage, and that it is purely a fancy fowl, it does not secure or retain many breeders in this country. Yet I do not remember the time when there were not a few good Sultans at our leading shows, and when ex-

hibited in the variety class they usually manage to secure a fair share of the prizes. I have often wished that some enthusiastic breeder would take them up with energy, and by securing special classes bring them more prominently to the fore, as they well deserve prominence for their beauty.

As their name indicates, they have come to us from the East, and it is now nearly forty years since the first specimens were brought over. Since the time referred to many attempts have been made to secure fresh importations of this breed, but with very few successes, as they seem to be bred to a very limited extent, and pure-bred stock are very seldom to be met with. This is to be regretted, as the importation of fresh stock is not only needed, but would have the effect of drawing others into the pursuit. Those which have been bred in this country are probably better than any to be found in the Ottoman Empire, as great attention has been paid to feathering and crests.

The colour of the Sultan is pure white, and the plumage is very full and flowing over the entire body. They carry a large globular crest, and have a small pointed comb, the head being balanced by muffs below. They have short legs, which are fully covered with feathers to the centre toe, and though not so much booted as are booted Bantams, are fullest in this respect of any larger breed. They are also very heavily hocked, and carry five toes on the feet. Their nature is very tame, and for this reason they are admirable pets, whilst their inability to scratch makes them very suitable for lawns and gardens, whereon they look very pretty indeed. They are small eaters and good layers. In weight the cocks are preferred about 4 lb. to 5 lb., whilst hens are a pound less.

CHAPTER XVI.

BANTAMS.

Value as pets—Origin of Bantams—Game Bantams—Bantams not Game.

To many poultry keepers Bantams offer special attractions by reason of the fact that they can be kept where it would be impossible to maintain larger fowls due to limitation of space. And, also, our diminutive types of poultry are, as a rule, more suitable as pets, whilst their active habits, bold, almost impudent, demeanour, and prettiness are very pleasing indeed. Economically, considering their size and cost of maintenance, they are profitable, though of course the produce is of no use for marketing purposes.

It is generally acknowledged that we owe these small races to the East. There is no, however, reliable data to define just when and where these birds originated. Wingfield and Johnson's Poultry Book, which was published in 1853, says :—" There can be little question but that it is to the islands of the Eastern Archipelago that the origin of this Liliputian family must be referred; but whether all our present varieties owe their origin to descent of any one primitive stock may be the subject of speculation, indeed, though hardly at the present day,

capable of proof. Bantam, however, a town and district of Java, has afforded their present designation, and the wild Bankiva fowl is the bird to which they are usually considered to owe their origin. Early in the seventeenth century the English possessed factories at Bantam, and thence the introduction of the domesticated Bantam into the country followed as a matter of course." But whether such importations were only of one sort, or included in any of those varieties in which we now see them, there is no evidence to determine. But under whatever circumstances they might have made their appearance in England, it is clear that for upwards of two hundred years they have maintained their ground; and, although fashion has undergone many changes as to the particulars of form and feather, she still continues to regard them with a favourable eye. However highly estimated in rural districts for their good qualities as nurses for Game and the more valuable specimens of the smaller fowls, their head-quarters are usually found in the manufacturing districts and in the neighbourhood of large towns, where the diminutive proportions and contented disposition within narrow limits specially recommend them. It is worthy of note, however, that dwarfed fowls have been known for a long period, and have been referred to by writers as far back as the time of Pliny.

GAME BANTAMS.

Sub-varieties: *Black-breasted Red; Brown-breasted Red; Pile; Duckwing; Malay.*

Bantams are divided into two great sections, the Game and the Not Game. This division is a very simple one, and could not be improved upon, for it at once defines the most prominent characteristic of the Game varieties.

These latter embrace the same distinct kinds as are to be found amongst large Game, and they are as carefully bred. In fact, apart from their size, it is often a question whether the Game Bantams are not better in point of character than their larger brethren. It would be difficult to decide this point, and it is a great tribute to the efforts of Bantam breeders that such a thing can be said.

Of Game Bantams there are four recognised colours,

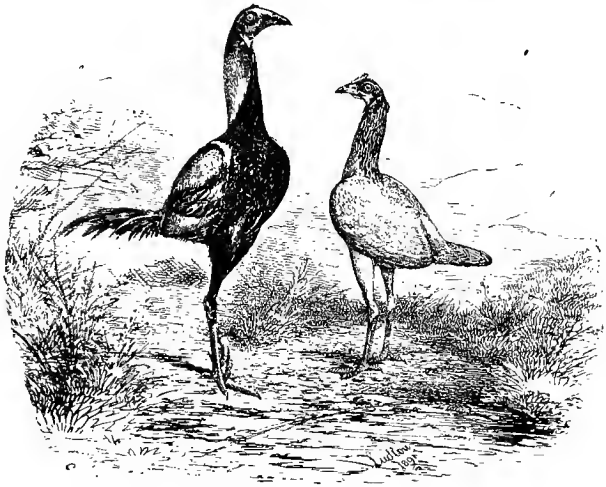

Fig. 29. Black Red Game Bantams.

though the addition of Malay Bantams will make this number five, for Malays can scarcely be included in the Not Game section, namely, the Black Reds, Brown Reds, Piles, and Duckwings. There are also white Game Bantams, black Game Bantams, and wheaten Game Bantams, but these latter are very seldom seen, except that the wheatens are used for the breeding of Black Reds and Duckwings.

Black Reds. The most important of Game Bantams is undoubtedly the Black-breasted Red, to give the full title. These are very rich in colour, and good specimens have realised as much as fifty pounds each. They are undoubtedly of English production, and probably at first were secured by crossing a Bantam with black-red Game. Now, however, all traces of this cross have been bred out, and they come perfectly true to colour, which is identically the same as that of the larger Game. Many of the best birds are remarkably small, and it would almost appear as if they were the very concentration of perfect beauty.

Brown Reds have never been so popular either in the large Game or Bantam varieties as are the Black Reds. The reason for this is not easy to discern, for though at present the colour is not so rich, or the combination of colour so effective, if the same attention were given there would soon be a very marked and striking improvement in this respect. A really good Brown Red can stand in competition anywhere, but it is not often met with. Perhaps one reason why Black Reds are more bred than Brown Reds is that if the two varieties come in contest for a cup, nearly every judge will give it to the former. This has a very decisive effect on breeders.

Duckwings. Another most beautiful variety is the Duckwing, in which the grey ground colour and delicate markings, make a really fine combination. This also is a variety which does not receive the attention it deserves. Perhaps the difficulty in obtaining specimens may account for the few breeders who take it up. Of it there are two kinds, the Duckwing and the Silver Duckwing, the latter being whiter in the neck, much paler on the breast, and lighter on the wings and back. Still it is a variety which deserves support and

encouragement, and any one who breeds it up with energy and skill would find plenty of reward both in pleasure and profit.

Piles. The Pile Game Bantam is usually regarded as the most beautiful of all Bantam varieties, its rich-coloured plumage, mingled orange-red, crimson, and white, with yellow or willow legs, at once forming a combination which is most striking. And as the efforts of breeders have resulted in the production of splendid specimens, Piles generally form a most attractive feature in any show where they are gathered in force. This combination of colour, as found in the Pile varieties of Game and Game Bantams, appears to lend itself specially to the breeder's skill, and the result is a very beautiful bird.

Malays. A decided acquisition within the last few years has been the Malay Bantam, introduced by the late Mr. Entwisle, who succeeded in obtaining both Whites and Reds. In that gentleman's account of his operations in the production of these Malays, he tells how for two years he endeavoured to obtain the first cross between small Malays and Game Bantams, but in this he failed entirely until he met with a small cinnamon Malay pullet, which he put into a run with a large Black Red Bantam cock, and from these raised a brood of chickens. He then mated a cockerel of this cross to his own mother, and their chickens were in appearance weak-headed Malays, *i.e.*, they were deficient of the cruel, heavy eyebrows, and their eyes were too red. He then obtained a very small cinnamon Aseel hen, and mated with her a three-quarter Malay cockerel, and each year reducing the size by always using a cockerel as small as possible, but one possessing the Malay character of head and outline of neck, body, and tail. Two crosses were

made in each year, that is, the January hatched birds were bred from at midsummer, and the summer and autumn hatched were bred from in January. Mr. Entwisle attributed the reduction in size as much to the using of immature parents as to the selection of the smallest birds each year. This has not, however, had any injurious effect on the stamina of the progeny, which are apparently as hardy now as their parents were twelve or fourteen years ago. The birds used for breeding were Red cocks and cinnamon hens, and there were from time to time a few Whites among the chickens, which have been as successful as the Reds. Hitherto there has been a difficulty in securing these without any sandy feathers, but a considerable advance has been made in this respect, and as Whites alone are depended upon for producing the colour, this difficulty will disappear. The average weight of these Malays at six months is 34 ounces for cockerels, and 20 ounces for pullets, increasing one-third by the twelvemonth's end. Pheasant Malay blood has also been introduced, and we may hope to see this handsome marking yet in the show pen.

BANTAMS, NOT GAME.

Sub-varieties: *Black Rose-combed; White Rose-combed; Booted (black and white); Sebright (gold and silver); Japanese; Nankin; Frizzled; Burmese; Brahma; Pekin, or Cochin; Cuckoo, or Scotch Grey; Polish.*

Of late years there has been a great increase in the number of the varieties of Bantams, Not Game, and a considerable development in the interest shown in these birds. It is frequently the case that the smaller the thing the greater are its beauties, for reduction in size

gets rid of a coarseness which sometimes characterises larger animals. Consequently we often find that Bantams are the more beautiful. The recent development in varieties of Bantams has been almost entirely in the Not Game section, for reasons which are very obvious. Hitherto the large varieties of Game fowls have been almost entirely represented in miniature, so that those who wish to exercise their skill in the production of small breeds were perforce to turn their attention to the many other breeds of poultry which were unrepresented in the same manner. Probably we shall ere long have almost every breed of poultry with its prototype in miniature. There are now more than a dozen varieties of the Not Game Bantams.

ROSE-COMBED. The most popular of all the varieties of Bantams are the Rose-combed, of which there are two, the black and the white. But of these the blacks are the most largely bred. They have been brought to a very high state of perfection, and marvellously perfect birds are to be seen at the principal shows. In carriage, shape, and appearance, the black Rose-comb is the miniature of the Black Hamburgh, which it rivals in respect to its beauty of plumage.

BOOTEDS. It is thought that the feather-legged and feather-booted varieties, which are known as Booted Bantams, were formerly amongst the most common of their race in this country. They were to be found of various colours, namely, black, white, yellow, and also speckled. These were larger than the birds of the present day, and more stoutly built. For a considerable time it almost appeared as if these birds were extinct, but they are to be met with in the yards of a few breeders, and at some of the leading shows classes are provided for them, which has had the effect of stimulating interest

in the breed. As the name implies the legs and feet are feathered. This feathering is so long that there is no other variety of poultry that can compare with it. It is in fact more profuse than in the pouter pigeon, which, as is well known, is the heaviest feathered of fancy or domestic pigeons. Booted Bantams also carry very heavy hock feathers, by which term is meant the stiff feathers protruding from the thighs. The shape of body differs materially from that of the Rose-combed Bantam, in that it appears longer, the breast not being so prominent, though the size is actually no greater. The tail is formed of sickles in the same manner as already described. The comb is usually single, and in this respect a great improvement might be effected, for this prominent feature is often coarse. At one time Rose-combed Booted Bantams were bred, but now are not to be seen. The colours are black and white, each of a pure self colour.

SEBRIGHTS. The Sebright, or laced, varieties of Bantams, of which there are two, the gold and the silver, take their name from the originator, Sir John Sebright, who, early in the century, made them from such composite elements as were to his hand. From the account published in Tegetmeier's Poultry Book, it will be seen that the first cross was between a common Bantam and a Polish fowl. The chickens resulting from this alliance were bred in-and-in until the required markings were secured. Sir John then accidentally found a hen-tailed Bantam cock in the country where he was travelling. This short-tailed bird he in-bred with his newly manufactured Bantams, thereby securing the hen feather which is so marked a feature of the Sebright cock. The special marking of the Sebright Bantams is that every feather is laced or edged with black, and thus

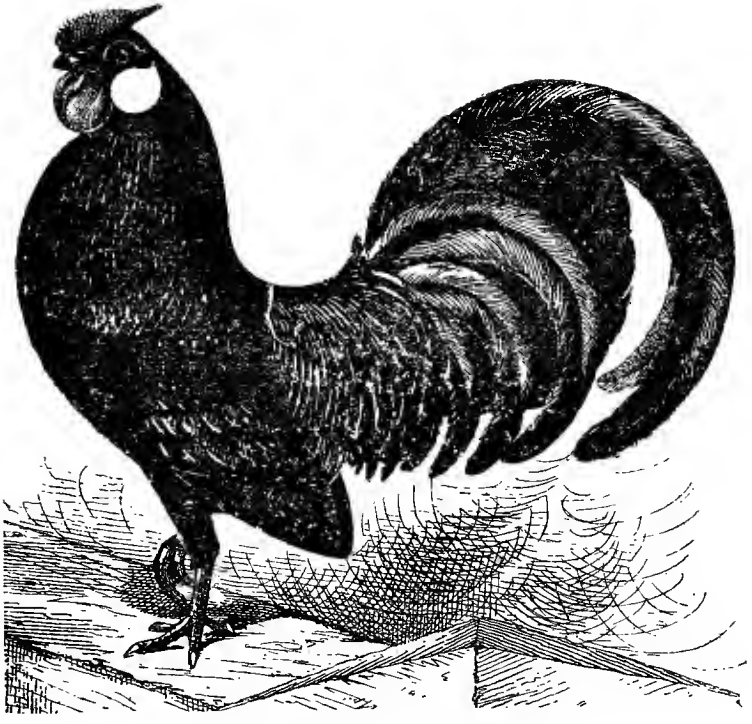

Fig. 30. Black Rose-Combed Bantam Cock.

in well-marked specimens the whole of the body is covered with even half, or semi-circles of black upon the ground colour, which in the golden variety is a rich bay, and in the silver a clear silver white. This marking extends over the whole plumage of both the cock and the hen, there being no variation between the sexes as is common in other varieties. Thus whilst in the Silver Spangled Hamburgh there is a marked difference between the cock and the hen, especially in the hackles and tails, the same being seen in the Polish, there is no such difference in the Sebright. The cock, as already stated, is hen tailed and feathered, that is, has not a loose, flowing hackle or a sickle tail. The comb of the Sebright is rose, but as a rule this is the weakest part of the bird, and it is very seldom that a really good combed Sebright is seen. This variety is not so active as are the Rose-combs, and the chief trouble the breeder has to contend with is the uncertainty in breeding, for as a rule they are very sterile. Whether this is due to the hen feathering in the cock, as has been suggested, is a matter which has never been decided.

JAPANESE. Several very quaint varieties of Bantams have been received from Eastern Asia, Japan and Burmah especially. It would appear as if the poultry breeders of those two countries seek after that which is abnormal, and devote their attention to producing the uncommon in shape and gait, or in feather. The appearance and gait of the Japanese are very peculiar. It is built upon very short legs, is yellow in colour, and the wings droop to the ground, whilst the tail is thrown forward and the head back, so that the carriage of the bird is very strange indeed, in some respects resembling that of a fan-tail pigeon. The tail and wings are both heavy in comparison with the size of the fowl, and thus,

judged on any lines of uniformity, that bird would have to be pronounced a monstrosity, especially as the comb and wattles are large enough for a 7 lb. fowl. When made to show itself a really good Japanese fowl will often throw its tail over its head, and ordinary canons of beauty must not be regarded in deciding upon the merits of this bird. There are several colours, but that chiefly seen is white in body, with black wing-flights, and long black sickle feathers showing white shafts. The comb is large and single, with long pendant wattles. There is a variation of the white Japanese in which the tail is edged or laced with black, in the same manner as is that of a Silver Pencilled Hamburgh. When really good this lacing is very effective in appearance. There is also a speckled, or cuckoo, Japanese Bantam, but not many are seen; and at the Paris show of 1886, whereat was a fine lot of these birds, was a novelty in the shape of a pair of silky Japanese, white with black tails, and very soft in feather.

Nankins. This is a variety which is not often seen now, probably because there is not room for two varieties having the Cochin type, for there is a very distinct difference between the Pekin and the Nankin.

Frizzled or Friesland. Frizzles form a variety which has of late won for itself a large number of breeders. In shape they are as nearly like the Japanese as possible, except that the tail is not carried quite so high. The body is small and the legs very short and clean, and having only four claws. The comb is single, and with the ear-lobes red, but the peculiarity of these birds is that the feathers are curled over the whole body, thus giving it the appearance as if all the feathers were standing on end from the middle of each. The feathers are rather broader than usual, or have that appearance. There are several

colours, namely, whites, blacks, buffs, greys, and spangled or laced, the whites being the best in respect to quality. There is, however, at the present time a want of uniformity among specimens of this breed, and birds of all colours are sometimes shown, winning prizes. There has been much crossing into the Frizzles, with the result that breeders have plenty of work to do in order to secure something like uniformity. Rose-combed birds sometimes win, though single combs are regarded as the right thing.

Burmese. The opening up of Burmah by the bringing of that country under the British flag, has been the means of introducing a new variety of Bantams which has distinct features of its own. And as the country becomes more settled, and our soldiers have time to regard the natural features and animal life of that Eastern dependency, we shall probably have others come to us. At present the natives will not, if they can help it, permit their conquerors to see anything that can be kept from them. But in course of time this feeling will wear off. Mr. Entwisle was informed by an English officer, who spent some years in Burmah, that the natives give preference to speckled or spangled varieties, these having white ground and splashes of red, buff, or black, or any two or three of the colours; but that pure whites and blacks are highly prized and very rare. There are also other colours, and at present considerable variation is found in the chickens bred—blacks, whites, pile-coloured, speckled, and dark mahogany-coloured chickens all coming from the same parents. These Burmese are very quaint little birds, with immense long, flowing tails, very abundantly sickled; they have smallish combs, single, full chests, heavily-feathered legs and feet, and drooping wings, very short backs, full breasts, with the head thrown back so as to touch the tail.

Brahmas. It can scarcely be said that Brahma Bantams have been brought to perfection, but some very fair specimens have been shown, especially in lights, and it seems probable that in a year or two both darks and lights will be entirely typical of this breed.

Pekins, or Cochins. This is another variety of fowl which we first became acquainted with through one of those little wars which seem to occur so constantly in the East. In 1860 the summer palace of the Chinese Emperor at Pekin was sacked by English and French forces, and part of the plunder brought home consisted in a few of these Pekin Bantams. They are in reality miniature Cochins, and have all the character of the larger fowls, except that they are somewhat shorter in the leg. Up to recently they have not, however, been quite so good in colour, but some recent importations, and Mr. Entwisle's breeding down from Cochins proper have greatly improved this point, and also made the variety much hardier. Only the buffs and blacks appear to be known in China, but we have now both whites and partridges. All these form very pleasing members of the Bantam family, their well-clothed bodies, fine outline, and rich colour giving them that handsome appearance which is so characteristic of Cochins. The blood of the Cochin proper will do much to prevent a delicacy of constitution which has stood in the way of the breed's popularity.

Cuckoos. These are sometimes called the Scotch Grey Bantams, and are really the Scotch Grey fowl in miniature; they have the cuckoo plumage, that is, a bluish-white or greyish-white ground colour, with bars or moons of bright metallic black. This covers the whole of the body in cocks and hens, and in good

specimens is very pretty. The comb is single, and the legs white, or almost white. There is no record as to how the Cuckoo Bantams have been produced, but all the probabilities are that they have been reduced from the larger breed, and it does not appear at all a difficult task to reduce them. The Cuckoo Bantam has won a fair amount of popularity, and is an admirable pigmy for keeping in thickly populated districts, where it would be impossible to maintain satisfactorily any of the lighter coloured varieties.

Polish. It is surprising that up to a few years ago no attempt had been made to produce Polish, and thus add to the varieties of Bantams some representatives of these beautiful fowls. Such, however, was the case. A few years ago the late Mr. Entwisle took these varieties in hand, and we have now fairly good representatives of the different colours.

CHAPTER XVII.

WATERFOWL AND TURKEYS, &c.

DUCKS.

Varieties : *Aylesbury ; Rouen ; Pekin ; Cayugas ; Ornamental Breeds.*

Before proceeding to deal with the different varieties of the domestic duck, it will be desirable to say something as to the origin of this important member of the poultry yard. Although there have been those who refused to believe that all our different breeds have descended from the wild duck, their number has been very small, and the weight of evidence is all against them. Proof is not always easy to find, but in this case what better confirmation can we have than the fact that wild ducks have been domesticated? On this point Darwin * says, "Unless we deny that domestication, prolonged during centuries, can effect such unimportant characteristics as colour, size, and, in a slight degree, proportional dimensions and mental disposition, there is no reason whatever to doubt that the domestic duck is descended from the common wild duck, for the one differs from the other in no important character."

* "Variations of Plants and Animals under Domestication," vol. i.

It is scarcely necessary for us to give a description of the Mallard, or wild duck. Full particulars can be found of it in any work on natural history, and its appearance is well known. Moreover, the plumage is the same as that of the Rouen, or nearly so. Bringing the wild duck under domestication appears to have been adopted at a very early period. Columella, a Roman writer who lived during the early years of the Christian era, described how this was done. He says that—"When any one is desirous of establishing a duckery, it is a very old mode to collect the eggs of the above-mentioned birds (such as the Teal, Mallard, &c.) and to place them under common hens. For the young thus hatched and reared cast off their wild tempers, and undoubtedly breed when confined in menageries. For if it is your plan to place fresh-caught birds that are accustomed to a free mode of life in captivity, they will be but slow breeders in a state of bondage." Varro, and Aldrovandi later on, both described the same method, and in more recent years others have adopted this plan of securing stock.

Aylesbury. Far and away beyond the memory of man the white Aylesbury has been bred. Some old writers speak of it as the English, whilst there are others who give the cognomen "common" to the Rouen. The former is probably the more correct. Though we have no definite record of its production, what has already been said will indicate how it came about. From the fact that we have within the last twenty years received the Pekin, another white-plumaged fowl, from China, it is just possible that at the same period a white-plumaged duck was imported, of which there was no record made. But this is unlikely. Sports are not at all infrequent, and these would only need to be selected from for a few generations to fix the colour. The continuance of breed-

ing would give that size and quality which are so marked a characteristic of this breed. Whilst, therefore, we are able to find no definite information as to the variety, its value has been appreciated for a long period, and its breeding carefully followed.

Very little information is afforded in the writings on poultry published early in the present century and previously to that time. Even so careful a writer as Moubray, good though he is in most respects, says very little respecting the varieties of ducks. Some writers maintain that the Aylesbury is the best of all ducks, whilst others claim this position for the Rouen, one saying that the former is inferior in flavour, the flesh being too light coloured and chickeny. That it is neither so high coloured in flesh or so strong in flavour as the Rouen cannot be gainsaid, but to many this is a decided recommendation rather than otherwise.

Even though we admit that the Aylesbury duck is not so high in flavour of flesh as that of the Rouen, it occupies a very important place, in that it supplies a distinct need for spring ducklings. It is very rapid in growth, and can be marketed when less than eight weeks old, weighing at that age 4 lb. The bone is very light, and there is comparatively little offal, the flesh being well placed and abundant. Adult ducks can be obtained to 18 lb. the couple, but they cannot compete with the Rouen, which, being slower of growth, are of little use for the early markets, growing to a larger size. Nearly all the Aylesbury duck trade is in spring ducklings, and the season in that district is practically over by June, when prices fall greatly. The points to be looked for in this variety are pure white plumage, with pinky-white or flesh-coloured bill, and bright orange legs and feet. The size is large, body long and deep, with long neck and head.

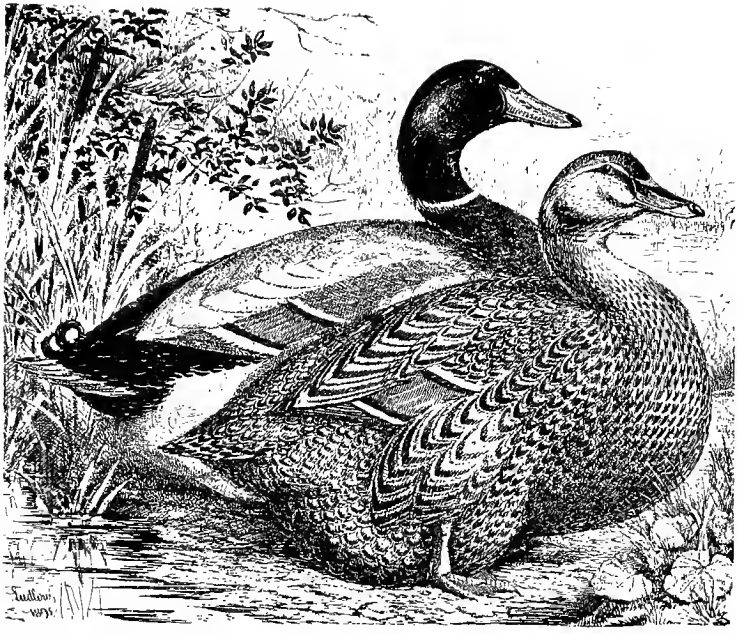

FIG. 31. ROUEN DUCKS.

Bred by and the property of Mr. W. Bygott, Ryehill Farm, Ulceby, Lincolnshire.
Drake, winner of First Prizes at Royal Shows, 1888, 1889, and 1890.
Duck, winner of First Prizes at Royal Shows, 1890 and 1891.

ROUEN. From the name given to this variety of the duck family it is commonly supposed that it originated near the city of Rouen in Normandy. But this is another of those cases in which the name directly misleads. Large numbers of ducks are bred on the banks of the lower Seine, and amongst them there are often to be found those with plumage like that of the Mallard, or wild duck. It is the case that at one time some of these were introduced into England, and as this variety is called the Canard de Rouen, or Rouen duck, in France, the nomenclature was adopted without further question. Whether this is so or not the name is erroneous, so far as it would show that the variety originated at Rouen. The more probable explanation is that it is a mere variation of another term.

Amongst those who keep ducks for exhibition the Rouen is certainly first favourite. This is scarcely surprising when the variety of markings, richness of colour, and large size to which specimens attain are considered. Some of the classes seen at important shows are simply enormous, in which many come so near alike in quality that only by rigid adherence to the canons laid down can selection be fairly made. The value of this breed in economic qualities is great, but it cannot compete with the Aylesbury so far as early marketing is concerned. It is much slower in development, and during the early weeks of its life is engaged more in the making of frame than of flesh; but it grows to a larger size than is ever reached by the Aylesbury. It is chiefly used for the breeding of late ducklings, and for supplying ducks in the autumn and winter. The flesh is excellent, very full in flavour, and, when the duck is fully grown, very abundant. As showing the size to which these birds can be bred, at one of the

Birmingham shows a pair of adult Rouens were exhibited weighing 23 lb. 10 oz.

In appearance the Rouen is very handsome indeed, and the drake's richness of colour, added to the variety of markings, make him the most beautiful of our larger varieties of waterfowl. Rouens do best with freedom, and where they can have this they thrive well. They are of little use for killing until well grown, and, as we have already said, are better for supplying the autumn and winter markets than for the spring trade. They are prolific layers of large, pale green eggs, and the young in down are brown and yellow, with yellow legs.

Pekin. The Pekin duck, which, both in America and England has become very popular, is one of those breeds for which we are indebted to the land of the rising sun. This breed was first publicly introduced into England in 1874, but from the records of that period it would seem that some specimens had been imported some two years before by a gentleman who had brought them direct from Pekin in 1872. He, however, not being a fancier or exhibitor, had merely kept them for his own purposes, and those which first came before public notice were imported from America, where they had been received the previous year. Their attractive appearance, prolificacy as layers, hardiness, and apparently large size made them speedily popular, and for a time it almost seemed as if they would take the place of the Aylesburys. The close breeding of the latter had somewhat enfeebled them, and they were not always easy to hatch and rear. With the Pekins, as one breeder expressed to us, every egg was fertile, every egg hatched, and every duckling lived, so that they brought a stamina which was very useful indeed. Not only so, but their prolificacy made their fame. It cannot be said that they have of late

years maintained their position, for they have proved to be not quite so large as their appearance would seem to indicate. Though undoubtedly larger in frame than the Aylesbury, they do not carry the same amount of flesh, and at the great Birmingham show have usually fallen behind the Aylesburys and Rouens by 5 lb. The reason for this is that the Pekins do not easily lend themselves to fattening, and, like all fowls specially noted for laying qualities, are not equal for table purposes to those varieties which are not so good as egg producers. There cannot be excessive quality in both directions. The flesh of the Pekin is, also, not equal to that of the Rouen, the Aylesbury, or the Cayuga. We have, therefore, come to regard the Pekins in their true light, and they have taken their place as the best of all the duck varieties as layers, in which respect the primary claims for them have been fully borne out by experience, if they have not in the other direction. It is, however, difficult to secure them absolutely pure, as there has been a great amount of crossing with the Aylesbury. In fact, the canary, or yellow, ground colour of the plumage has in many strains almost disappeared. They are long in body, but have a more upright carriage than Aylesburys, from which variety they can be easily distinguished. They also have yellow bills.

Cayugas. The chief feature of the Cayuga is its high-flavoured flesh, in which respect it excels the wild duck at some seasons of the year. There can be no question that the Cayuga is by far the best in this point of all varieties of the domestic duck. It is, however, much smaller than either the Aylesbury or the Rouen, and here an improvement is desirable. This want of size is more or less to be attributed to crossing with the Black East Indian, the object of which has been

to obtain a richer and more perfect plumage. The Black East Indian is really a Bantam representative of the Cayuga, but is much more brilliant in plumage, and not so liable to cast white or coloured feathers. But it is to be regretted that in order to secure this end more speedily the size of the fowl has been so much reduced. The Cayuga fattens well if properly fed, but needs a larger carcase on which to lay the flesh. They are naturally hardy, but the crossing with the Black East Indian has not done any good in this direction; they are prolific layers, and come to maturity at a very early age. They are also noted as stay-at-home birds, and for this reason will recommend themselves to many duck keepers who have been troubled by the wandering tendencies of other varieties of waterfowl. In point of shape the Cayuga does not differ materially from the Aylesbury and Rouen. The beak is, however, though also fine and tapering, more saucer shaped, turning up at the point. The plumage is black throughout, and the freer from brown or white feathers the better. It is the presence of these coloured feathers that has caused resort to crossing, but by careful selection they can be bred out. The plumage, as already stated, is of a rich, glossy black, but the effect of this is heightened by brilliant greenish reflections on the head, neck, and wings, more strongly shown in the drake than in the duck. The bills are usually of a deep blue-black, but, like some other varieties, change at different seasons of the year; the eye is jet black, and the legs and feet a dusky orange yellow. With all black-plumaged fowls white feathers do occasionally appear, and therefore it must not be supposed that they are impure because this is the case.

ORNAMENTAL BREEDS OF DUCKS.

Black East Indian—Mandarins—Carolinas—Call—Kasarkas, &c.

We have already dealt fully with the larger varieties of ducks, but in addition to the breeds described by us there are many others which can scarcely be regarded as suitable for commercial purposes; but as some readers have opportuuities for keeping a few ducks, and care more for the look than for size or laying proclivities, we briefly describe them. Perhaps the prettiest of all is the—

Black East Indian. This is a small ornamental variety which is also known as the Bucnos Ayres, or Labrador. They are very similar to the Cayuga in shape, colour, and general characteristics, but in size are smaller, and are sometimes bred only 2 lb. in weight, due to the foolish prejudice in favour of small birds amongst exhibitors, for the smaller the bird is the greater chance there is of winning in the show pen. This has led to in-breeding to a very large extent, and, as a result, the breed is delicate and difficult to rear.

Mandarins must be pronounced one of the most beautiful of all domesticated fowls, especially the drake, and we shall never forget the effect upon us of about a hundred of these beautiful birds on one of the lakes at the Jardin d'Acclimatation, Paris. They are from China, where they are held in the highest esteem, and are very difficult to obtain. Though wild in that country, they are carefully guarded, and it was with the greatest difficulty that any could be procured for export. They are very tame, can be fed easily, give scarcely any trouble, do not attempt to fly away, and are consequently most suitable for ornamental purposes, for which reasons they are very

popular. We have said they are very beautiful, which any one who has seen them will testify. To describe the plumage of the drake is scarcely possible, as there is in it nearly every shade of the rainbow, mingled or intermingled together in the most delightful manner, and we should require to give so much detail that we cannot afford the space. As nearly every good-sized show contains one or more pens of these birds, they are by no means uncommon; readers can see them for themselves, and will then realise that we have not over-praised them. They are diminutive in size, but are good layers of small eggs.

Carolinas. This variety stands next in order to the Mandarins for beauty of plumage, but cannot compete with its richer-coloured brethren, as it is without the lovely wing fans which are so striking a characteristic of Mandarins. It is, as might be supposed from its name, from North America, where it is found in very large numbers. It is a wild bird and very difficult to breed, on which account it does not recommend itself to all. One gentleman we heard of was very successful in breeding, but he placed small coops, the shape of an ordinary dog-kennel, upon the top of a stake driven firmly into the bed of a pond, the floor of this coop being just above water level. But of course this is not possible in many places. The Carolina is about the same size as the Mandarin.

Call Ducks. Of these there are two colours, the white and grey, which are simply the Aylesbury and Rouen in miniature so far as colours are concerned, but in other respects they are different. These birds are sometimes called Decoy Ducks, for they were at one time used as decoys for wild birds. In head the Call Duck is very short and round, high in front, with a very

short, thick, and broad bill. The colour of the bill is a brilliant orange in the white bird, and the same colour as the Rouen in the grey. The body is neat in shape, short, and elegantly carried; the neck, though short, is graceful; the legs and feet are orange colour. So far as weight is concerned, 2½ lb. is reckoned full size, and, when showing, as much smaller as possible. This breed is very tame and domesticated, does not fly away, and is very good on the table, what there is of it, which, of course, is not much.

Kasarkas, or Sheldrakes. Perhaps of all ducks this variety is the least common, but it has long been known to naturalists, as it is found almost all over the world. There is the common, the ruddy, the Radjah, and the New Holland Sheldrakes, all of which, though of the same variety, have some individual characteristics. The first named will, however, suit our purpose here. It is about the size of a wild duck, and a little more than 2 lb. in weight. The bill is broad, and turned up at the end, and of a somewhat varying colour; the nostrils are black, and at the base of the bill is a rising knob. The head and the neck are an iridescent green, the forepart of the wing is black, the tail, abdomen, and coverts white, the tail feathers being tipped black, and there is a black line running down the abdomen. The upper part of the back is a deep iron red, and a band of the same colour runs across the breast, which becomes narrower towards the sides, and passes under the wings and round to the upper part of the back. The wing bar is green, the legs orange, the middle of the breast, belly, and vent are dusky mixed with white, and the sides of the belly white. The female is smaller than the male, but in all other respects, except richness of colour, the same. Sheldrakes can be bred in a farmyard, and will

eat readily with other fowls, but are at times vicious, and must have water or will not thrive, but they do well where there is water.

In addition to the varieties named there are Spotted Bills, Whistlers, Bahamas, Pintails, &c., but they are scarce, and the varieties described by us will doubtless suffice for the needs of our readers.

GEESE.

Varieties: *Toulouse; Embden; Sebastopol; Chinese; Egyptian.*

This favourite waterfowl is more suitable for farmers and cottagers than for those who desire to combine pleasure with profit, and certainly ought not to be kept by any one whose space is limited. Geese need abundance of room, and, in the case of breeding stock, access to water. But there must be many poultry keepers in rural districts who have opportunities of breeding these useful members of our stock yards, and a work like the present would be incomplete did they not find a place in it.

Toulouse. The Grey, or Toulouse, goose is the most popular of our varieties, and I have pleasure in extracting some notes from an article by my friend, Mr. D. Bragg, which appeared in the *Live Stock Journal* almanack some time ago:—

"This noble bird, both male and female, should be very massive in all proportions, with deep perfectly divided double breast touching the ground and extending well in front of the legs. This gives the bird when standing at ease a square appearance, but it is capable of raising the body to a majestic height and presenting

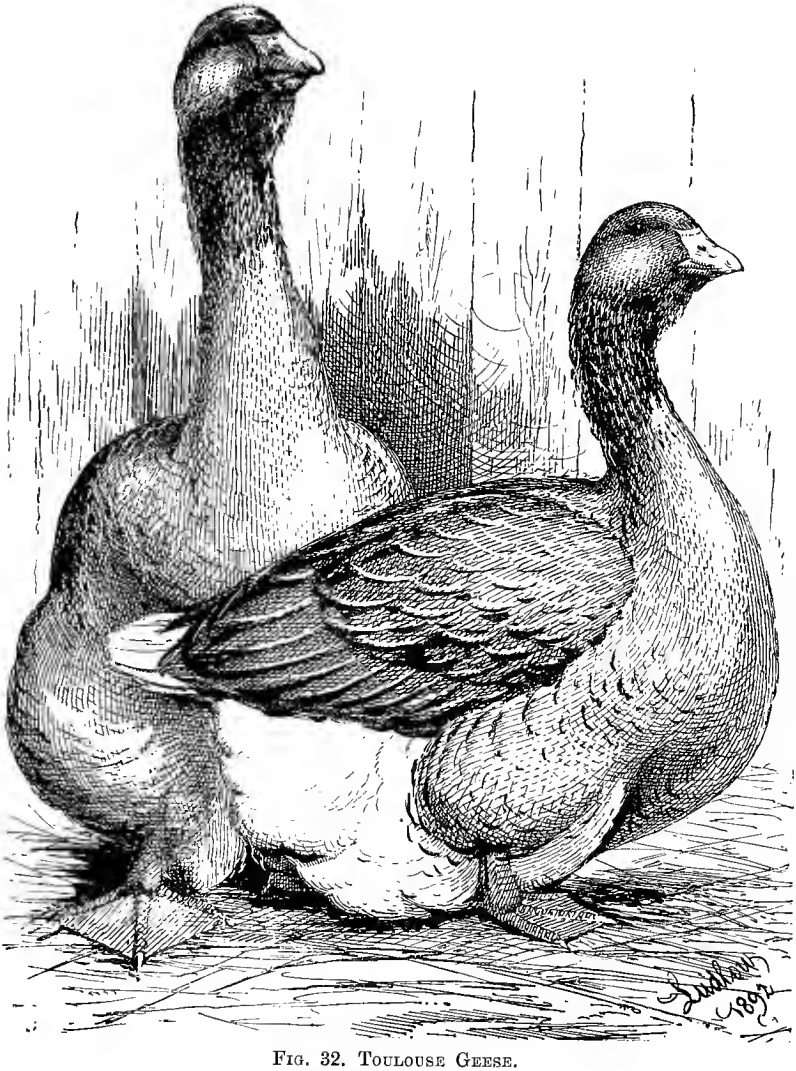

FIG. 32. TOULOUSE GEESE.

Bred by and the property of Mr. D. Bragg, Southwaite Hall, Carlisle.

a bold front; head and bill very strong, and joining with a uniform curve which gives the head a pleasing and intelligent expression. Throat "dew-lapt"; colour of bill and feet dark orange; head, neck, back, and thighs a dark-shaded brown-grey; the outer edge of each feather distinctly and boldly laced with a very light (almost white) shade of grey; breast of the same colour but descending evenly lighter beyond the legs, from which to tail is perfectly white, presenting an attractive contrast. The grey feathers on thigh should form a perfect three-quarter circle; tail white with broad grey band across centre of top; wing-flights very dark shaded self-coloured grey. The Toulouse breed are very uniform in colour, the male and female being alike to a feather. A flock of fifty mature birds is a very striking sight.

"The Toulouse goose may almost be classed as a non-sitting variety; they are wonderfully good layers, though rather late in starting, rarely in this district (Southwaite, Cumberland) before the middle of February, and continue laying so late in the season that should they then show an inclination to sit, which is generally slight, if at all, it is not worth while risking eggs with them. Thirty eggs in a season is only a fair average for one healthy goose to produce; exceptional birds I have had lay up to fifty. Thirty goslings reared from one goose in one season is one account I have; 109 eggs all fertile from three geese is another; but over-fed exhibition geese will of course fall short of this.

"Toulouse goslings grow bone very fast, and being loose in skin they soon fill the eye and the exhibition pen. But they are very deceptive layers when young and raw, even under favourable circumstances many pure strains of them will not gather flesh and fat until fully matured, when they can then be fed to an enormous

size and weight, unsurpassed and unequalled by any other variety; they are, therefore, not so well adapted for early maturity, and are seldom fit for the table before Christmas, previous to which they dress very loose and blue in appearance, and are quite out of season as green, or Michaelmas, geese. Used, however, as a cross with any other variety of geese the produce mature and fatten very rapidly."

EMBDEN. Although the Toulouse goose may be regarded as the more popular and, probably on account of size, the most profitable, it has a formidable rival in the white, or Embden, variety, which is very fine in quality, but does not attain the same size. The question of size could soon be remedied by careful breeding, but the birds required for early markets can be best supplied for birds of this variety, as they grow more rapidly. There can be no doubt, however, that for the later markets in this country the Toulouse will be able to hold its own, for size is then of great importance. I do not know that this is a wise or a well-regulated demand, for the largest have seldom the finest flavour, and Nature seems to hold a balance in all things, for when she gives excess of size she seldom gives with it the same flavour, and a well-fed Embden is a juicy and tender fowl, with the highest of quality. Specimens of this breed do not often attain more than 19 lb. or 20 lb., but at times heavier birds have been found. In colour the pure Embden is of a pure white, with a pinky, flesh-coloured bill, orange-coloured legs and feet, and a blue eye. The egg is usually white, and the young for the first period of their existence are yellow in down.

SEBASTOPOL, OR DANUBIAN. It is under the latter name that we generally see this breed at Continental shows, and that is probably the more correct term, for

there does not seem any reason to connect it with the town of Sebastopol. Possibly the name may be explained by the fact that it was brought over to this country about the time of the Crimean War by ships returning from the Black Sea, and the name would be given at that time. The great peculiarity of the Danubian is that the hind-quarters of the bird are covered with loose, shaggy feathers, long enough to trail on the ground. These differ from the Frizzled fowls which also come to us from South-Eastern Europe, in that they do not curl back in the same manner. The plumage of the Danubian goose is pure white; in some specimens grey or light brown patches are to be found, but the correct colour is white. They are moderate layers, but make excellent sitters, and not having the disposition to roam so much as found in some other varieties, are on that account to be recommended for all who have only a limited space upon which to rear their stock. When used for ornamental purposes they are especially suitable for small sheets of water, as they do not take to the wing, and are not so liable to be lost. They are gentle in disposition, and thrive well with other fowls, being also good foragers and look well after their own living on pastures.

Chinese. This variety is not very common in this country, and though classed with geese is really more like a swan. It is known as the Oie de Guinee, of Buffon, and is distinguished especially by its long neck, and a large knot at the base of the bill. From this latter point it has been called the Knobbed Goose, and also the Hong Kong, from the place of its origin. Although first brought over from China it is well known in many parts of both the continents of Asia and Africa. It is a very prolific layer, and the quality of the flesh is

regarded as superior to that of the common goose. The semi-swanlike appearance gives it a great advantage over the ordinary goose, which is not to be regarded as highly ornamental, but it is smaller in body. In colour the bill and legs are orange, the knob being black. The usual colour is a greyish brown on the back and upper parts, passing to white or whitish grey on the abdomen. The forepart of the neck and breast are a yellowish grey, and a very dark brown stripe runs down the back of the head to the body. Some birds are white with a pale stripe, but in all specimens of the Chinese goose this stripe is present. Another important point must not be omitted, namely, the folded skin attached to the throat forming a kind of dewlap. As an economic breed this can be recommended, though neither the eggs nor the birds are as large as in the common goose.

EGYPTIAN is a comparatively small bird, usually measuring from 27 inches to 28 inches long, and having a bill slightly over 2 inches. In the male the head and neck are hoary, the occiput a rusty colour, as also the stripe round the eye and down the neck. There is a castaneous ring around the lower part of the neck; the upper back, scapulars, tertiaries, and a patch on the back castaneous, some of the feathers being intermixed or sprinkled with black, and the inner webs of some of the tertiaries grey. The whole of the remainder of the breast and the under surface is a light iron yellow, sprinkled with brown, except the abdomen which is pure white; the vent is an iron red, the lower part of the tail and the spurious wings black, the second wings metallic green, and the shoulder and wing coverts white, the greater ones having a bar of black near the tips. The eyes and legs are orange. Some specimens have orange-coloured bills, and others a reddish purple. The bar of the wing is

unusually narrow and rich in lustre, and the pencilling or marking on the flanks, thighs, and breast most beautiful. The Egyptian goose is very different in formation from other varieties, is somewhat erect in carriage, yet short necked; it is Asiatic in the appearance of the head, the tail sloping down from the back, the whole body long for the size of the bird, and the legs somewhat short. In the female, which is slightly smaller than the male, the chestnut patches round the eyes and on the breast are smaller. This variety is easily kept and reared in confinement, and is very suitable as one of the ornamental waterfowl. It breeds well in captivity, but the gander is somewhat quarrelsome in disposition, and hence should not be kept with other fowls.

TURKEYS.

Varieties: *Black Norfolk; Cambridge Bronze; American Bronze; White.*

It is inadvisable for any one to attempt turkey rearing unless they have abundance of space, for these birds, more perhaps than any other denizens of the poultry yard, are unable to bear confinement. We have seen sundry attempts made to rear them in limited runs, but as yet the effort has not met with success. Those who are favoured with space will find turkey rearing profitable, provided that they can secure attention being given to the birds.

There are several varieties of turkeys known, but those which are usually kept in domestication do not exceed four, and the following notes will detail them.

Black Norfolk. This is the finest in flavour of flesh of any variety we have, and, as its name indicates, it is

black in colour. Whilst large in size they do not attain the same weight as the Bronze American, of which there has been an infusion of blood within the last few years to meet market demands for big birds. The Norfolk is probably the most delicate variety, and consequently it is not suitable except upon good, dry land.

CAMBRIDGE BRONZE. This is probably a cross between the American Bronze and the Norfolk, the former giving its predominant colour. It is larger than the Norfolk, and the evidence we have shows that at one time it was chiefly grey in its colour, the change being due to the crossing noted. It is very pretty in appearance, and carries with it a glossy tinge of plumage.

AMERICAN BRONZE. Of all the turkey race this attains the largest size, and very big birds have been seen. Its influence has been beneficial in two directions, namely, in giving greater size to our English birds and with it added stamina, which was very much needed. It is undoubtedly one of the handsomest turkeys known, the bronze colour of body, black breast, and great size give it a very striking appearance. We do not think it is so fine in flavour of flesh as the varieties already named, but to-day the question of size is all-important, and that being so we must be prepared for a certain loss of quality.

WHITE. This variety is seen more on the Continent than elsewhere, and they are very largely kept in the South of France. When good in colour they are very handsome and for ornamental purposes can be recommended very highly. The plumage is entirely white, with the exception of a black tuft on the breast. The quality of their flesh is also excellent. It is universally acknowledged that they are delicate and difficult to rear.

In addition to what has been stated with regard to keeping turkeys, we may mention that the great point is to give them every care, keep dry, feed well, and carefully shelter until the period known as "shooting the red," which takes place when they are about six weeks old, after which time they are as hardy as any other stock and can be given free range.

GUINEA FOWLS.

For various reasons guinea fowls are not so much kept now as they might be, considering that they are, as a rule, very profitable and also most ornamental. They are profitable for the reason that they cost nothing to raise. They prefer to seek their own food in the fields, and seldom come home for food as long as they can find a supply for themselves. As a rule they mate, and it is best to have the sexes equal. The hen steals her nest, but cannot refrain from making a noise when she comes off, which betrays her.

A breeder of this ornamental variety of fowl some time ago wrote that it is usual for the guinea fowl to lay in the nearest hedge bottom, or among a group of nettles. One soon finds out where the nest is by observing when the cock is alone and watching to see from what direction the hen bird comes. She will certainly do her best to hide the place by picking fresh grass and laying it upon the eggs, which lie on the ground, not in any regular nest.

A guinea hen will begin to lay about the end of April or the beginning of May, and will generally produce altogether about one hundred eggs. She may, perhaps, show signs of wanting to sit, but it is not advisable to sit any eggs later than the second week in June, because they

take a month to hatch, and the chicks, though quite easy to raise in June and July, will probably succumb to the first cold if hatched later. When young they need chopped eggs, and it is also wise to supply them with insects; a sod full of ants is a capital thing to bring them. The proper number of eggs for a sitting is sixteen. Each hen should provide three sittings, and that would leave about fifty eggs for use in the house. They are very rich, and are much fancied by some people for a delicacy. It is best to eat them cold like plover's eggs, with salad, or in the shape of aspic. Once reared the birds are not expensive to keep, as they roam far afield, and partially feed themselves; they eat a great many insects, and without any special fattening are always nice and plump in spring. They come into season when game goes out, and are generally killed between the middle of Feburary and the middle of April. In a private establishment they are most useful as a substitute for game when the only other birds to be had are expensive quails or ptarmigan.

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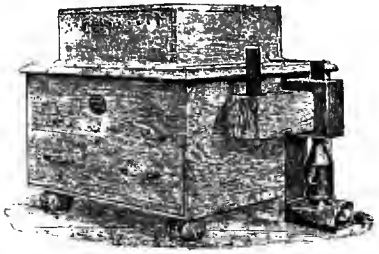

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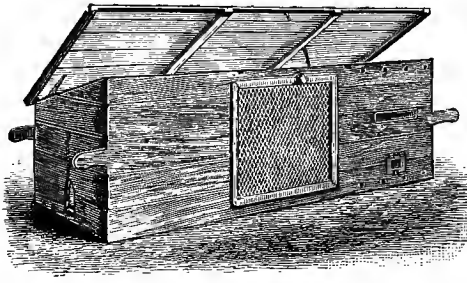

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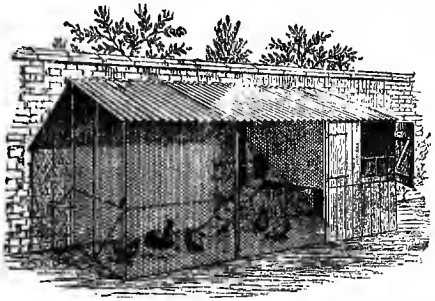

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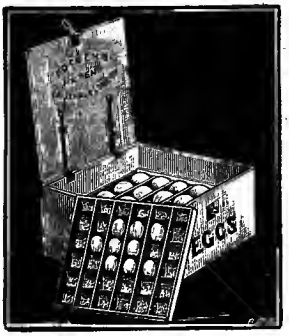

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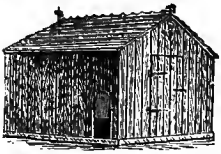

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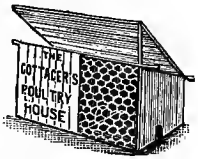

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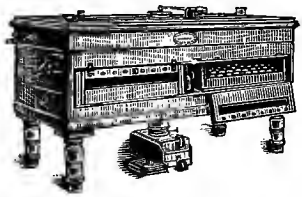

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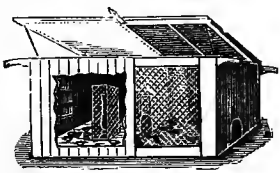

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